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The relationship between intellectual development using Hunt's Paragraph Completion Method and Buczynski's Ways of Knowing Inventory and collaboration in full-year student intern and cooperating teacher supervisory pairs

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**THE RELATIONSHIP BETWEEN INTELLECTUAL DEVELOPMENT USING
HUNT'S PARAGRAPH COMPLETION METHOD AND BUCZYNSKI'S WAYS
OF KNOWING INVENTORY AND COLLABORATION IN FULL-YEAR
STUDENT INTERN AND COOPERATING TEACHER SUPERVISORY PAIRS**

by

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DISSERTATION

Submitted to the University of New Hampshire in Partial Fulfillment of the
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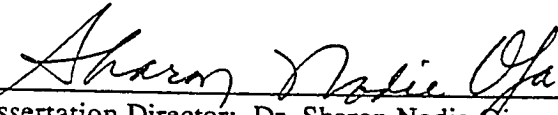
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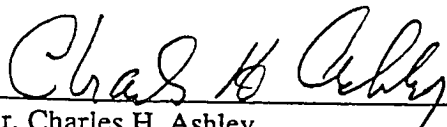
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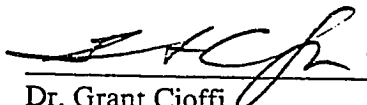
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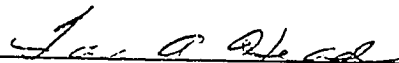
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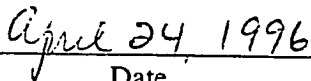

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ABSTRACT

THE RELATIONSHIP BETWEEN INTELLECTUAL DEVELOPMENT USING HUNT'S PARAGRAPH COMPLETION METHOD AND BUCZYNSKI'S WAYS OF KNOWING INVENTORY AND COLLABORATION IN FULL-YEAR STUDENT INTERN AND COOPERATING TEACHER SUPERVISORY PAIRS

by

Mildred H. Struck

University of New Hampshire, May 1996

The purpose of this research was to determine if there is a correlation between Hunt's (1971) Paragraph Completion Method (PCM) and Buczynski's (1992) Ways of Knowing Inventory (WOKI) and to examine the relationship between intellectual development and collaboration. The sample for the research included student interns in a five-year Master of Education program who were interning to gain their teaching certification. Also in the sample were cooperating teachers and university supervisors. Each of 74 women participants completed the PCM and the WOKI; the results were tabulated. a Pearson r correlation and significance levels were calculated, and a multiple regression was conducted to determine which WOKI subscales, if any, were predictors for the CL score. Results of the statistical analyses showed a weak negative correlation between the CL and the received knowledge subscale on the WOKI, and a moderate negative correlation between the CL and the procedural knowledge subscale on the WOKI. Results showed intercorrelations between the subscales on the WOKI which

are different from the original WOKI study. The multiple regression showed that procedural knowledge was a weak inverse predictor of the CL score.

To examine the relationship between intellectual development and collaboration, seven student intern-cooperating teacher pairs were selected for interviews. Each of them were interviewed twice, once in November, 1995 and once in January, 1996. Interviews were transcribed and analyzed for evidence of collaboration and confirmation or contradiction of the scores on the intellectual development measures. The interview results confirmed the scores of the participants on the PCM and WOKI. The collaborative pairs were strongly constructed knowers and had high conceptual level scores corresponding with Stage C. The non-collaborative pairs had more diverse scores on the WOKI, indicating that they shifted from one epistemological position to another. Two of the eight people in this group had CL scores corresponding to Stage A and Stage B, the other six scored in Stage C.

CHAPTER ONE

INTRODUCTION

The purpose of this research is to determine if there is a correlation between Hunt's (1971) Paragraph Completion Method (PCM) and Buczynski's (1992) Ways of Knowing Inventory (WOKI) and to examine the relationship between intellectual development and collaboration.

Theoretical Bases

The theoretical bases for this research come from three main areas:

- Intellectual development
- Epistemological positions of Women's Ways of Knowing
- Collaboration and reflective thinking in supervisory pairs

The first two areas are directly related to the first purpose of the research, namely to determine if there is a correlation between the PCM and WOKI. The third area relates directly to the second purpose of the research, namely to examine the relationship between intellectual development and collaboration in supervisory pairs.

In the following sections, each of these areas is discussed. A review of the relevant literature follows in Chapter Two.

Theory of Intellectual Development

One purpose of this research is to test the hypothesis that there is a correlation between the PCM and the WOKI. This discussion of intellectual development, Hunt's conceptual matching model, and the epistemological positions of Women's Ways of Knowing relate directly to this hypothesis.

It is assumed in a college classroom that each student has a preferred learning style. A good teacher tries to notice the learning styles and often will adjust her teaching to suit the students. Developmental theory provides tools to guide teachers in thinking about development and to develop strategies to accommodate differences in learning style and developmental stage. Some theorists in this field are Jane Loevinger (1976), who looks at ego development, Lawrence Kohlberg (1981), who focuses on moral development, David Hunt (1971), who concentrates on conceptual development, William Perry (1970), who investigates intellectual development, and Belenky, Clinchy, Goldberger, & Tarule (1986) who look at women's epistemological development. Each of these theories was influenced by Piaget's stage theory of cognitive development either directly or indirectly. Belenky's et al. theory was influenced by Perry's (1970) theory of intellectual development. There is a consistent moderate to strong correlation (Miller, 1981, and Hunt & Sullivan, 1974) among the developmental measures developed by Kohlberg, Loevinger, and Hunt, indicating that, if one has scored at a highly developed moral stage, then it is likely that the conceptual level (CL) score is also high.

Hunt's Conceptual Matching Model

Hunt developed a Conceptual Systems Theory in conjunction with Harvey and Schroder in 1961 (Harvey, Hunt & Schroder, 1961). From that point, the three theorists diverged and Hunt (1971) went on to concentrate on a Conceptual Matching Model. Hunt et al. (1978) continued the work with CL and refined a CL measure called the Paragraph Completion Method (PCM). The PCM is an instrument that requests a respondent to complete each of five paragraph stems using three or more sentences for

each. The paragraph stems direct the respondent to make judgments about her or his own thinking on different topics. For example, one stem is “When I am told what to do....” A total score on the PCM, called the conceptual level (CL) score, can range from zero to three. The scoring continuum represents the respondent’s increasing complexity of thought. The specific stems were chosen to “obtain a sample of how the respondent handles conflict or uncertainty and how he [she] thinks about rule structure and authority relations” (Hunt, Butler, Noy & Rosser, 1978, p. 2). Hunt used this measure not only to determine the respondent’s conceptual level, but also to tailor educational approaches to the preferred learning style indicated by the CL score. A low CL score indicates that the learner prefers a highly structured approach, while a high CL score indicates that the learner prefers an approach that has low structure.

Table 1: CL Score and Preferred Learning Style

CL Score	Preferred Learning Style
Low	High Structure
High	Low Structure

In 1975, Hunt stated, “Given the characteristics of low CL persons, (dependent on external standards and incapable of generating their own concepts), they should profit more from a highly structured approach. Given the characteristics of the high CL persons (capable of generating new concepts and holding internal standards), they should either profit more from low structure, or be unaffected by variations in structure” (p. 187).

Epistemological Positions of Women's Ways of Knowing

Belenky et al. (1986) looked at women's epistemological development and found some roots for their work in Perry's (1970) work. Perry (1970, 1981) had studied the epistemological development of [mostly] male Harvard undergraduates and later included a small sample of college women to verify the intellectual development positions he had found.] Belenky et al. interviewed 135 women and described "epistemological perspectives from which women know and view the world" (p. 15). The "epistemological perspectives" were grouped into five categories or positions: silence, received knowledge, subjective knowledge, procedural knowledge, and constructed knowledge. Belenky et al. left it to later theorists and practitioners to decide if the perspectives could be viewed as stages (p. 15).

Buczynski (1992) developed a Ways of Knowing Inventory (WOKI) based on the work of Belenky et al. The WOKI is a 49-item paper-and-pencil measure that is intended to measure how women [or people] think or act in particular situations. The WOKI contains five subscales according to the epistemological positions of Belenky et al. Each of the subscales is scored separately so that each respondent has five WOKI scores.

Collaboration and Reflective Thinking in Supervisory Pairs

The second purpose of this research is to examine the relationship between intellectual development and collaboration in the student intern (SI) and cooperating teacher (CT) pair. A student intern comes to the teaching internship with a goal to become certified in her field. To be certified, she must have a successful teaching experience and learn many things, for example, how to manage a classroom, how to

assess students, and how to work with the faculty and administration of the school. The cooperating teacher is in the classroom day-to-day with the student intern and is responsible to help the SI learn how to do all of those things, to observe and assess the SI's ability, and to provide feedback to the SI and the university supervisor on the SI's performance.

The relationship in a supervisory pair has often been defined according to the responsibility of each person in the pair. A supervisor has been characterized at times as prescriptive, or know-it-all (Glickman, 1988, Goldsberry, 1988). The normal course of action for this type of supervisor would be such that the supervisor would observe the supervisee, write an assessment, and give it to the supervisee with recommendations for improvement. In recent years, supervision has been characterized as a process in which the supervisor meets with the supervisee, asks questions that cause the supervisee to reflect on her performance, and together the pair work on strategies to improve performance. Supervision then becomes a continuous process that involves reflective thinking and collaboration and the supervisor and supervisee become colleagues, or co-explorers (Glickman, 1988).

Collaboration and supervision.

The literature on supervision in an educational setting often turns to a discussion of how teachers and their supervisors work together, or collaborate. Glickman, Gordon, & Ross-Gordon (1995) discuss "developmental supervision." Depending on the developmental level of the supervisee, Glickman et al. use one of three approaches to supervision: directive, collaborative, or non-directive. Thies-Sprinthall (1986) designed a training program around a "collaborative approach" in supervision. Part of the process

in supervision and in collaboration necessarily turns to solving problems as they arise in the classroom with pupils or with lessons, or between the supervisor-teacher pair.

What is collaboration? Griesel (1992), Kraus (1980) and Struck (1993), as well as many others, have discussed collaboration and collaborative problem solving. My working definition of collaboration is based on both my experience and a synthesis of key elements in the literature I have read on this topic. Collaboration is a process in which two or more people have a shared goal to work together. During collaboration, individuals share information, power, collective wisdom, leadership, influence, and strengths and weaknesses. They are willing to compromise, to take risks, and they trust and can be trusted. In terms of skills, individuals listen, synthesize, summarize, evaluate, restate, and bring discussion to a close and a conclusion using consensus. In a collaboration, decisions are made by consensus, where consensus (Ashley, 1992) is defined as the *opportunity* for each person to participate in the decision making and where each person agrees to test the outcome.

Reflective Thinking and Supervision.

In recent years, there has been much research on reflective thinking as it relates to teaching and teacher training. Work done by Schön (1983, 1987) has been very influential for educators. Schön first wrote in 1983 on what it is that professionals do when they are confronted with a situation that surprises them in some way. He labeled their response to the surprise as “reflection-in-action.” He later refined his definition of reflection-in-action (1987) as “an *action-present*—a period of time, variable with the context, during which we still can make a difference to the situation at hand—our thinking serves to reshape what we are doing while we are doing it” (p.26). He

describes the sequence of events that reshape “what we are doing” as the following: a professional does something—takes an action, notices that something unexpected occurs, thinks about it—reflects on it, experiments—takes a course of action.

When supervisors work with supervisees in a collaborative and reflective way, they allow the supervisee the time and space to think about her teaching and to formulate new strategies for change or improvement. For example, when a supervisor is engaged in reflective thinking with a supervisee, the supervisor may ask the questions “What did you learn in that class today?”, “How do you think the class went today?” Questions of this nature cause the supervisee to reflect on her work. Once the supervisee has the opportunity to frame the experience, she can discuss it with the supervisor and brainstorm, or problem-solve in a collaborative way.

Significance of this Study

The significance of this study can be seen in the two main purposes of the research. First, the significance is seen in the examination of the correlation between two measures of intellectual development, the PCM and the WOKI. Other studies of preservice teacher training have used the PCM, but the WOKI has not been used with preservice teachers to date. No studies have attempted to correlate the PCM with the WOKI, a measure based on women’s development. Seventy-five percent of the population from which this sample was drawn are women; according to a 1994 report from the NEA on teachers in public schools K-12, 73.1% were women.

The PCM has been used in hundreds of studies over the last 25 years and its validity and reliability are well-established (Miller, 1981). The WOKI is a new measure that has had limited use to date. If there is a correlation between the two measures, then

use of the WOKI may be indicated with SI-CT populations that are predominantly women.

Second, the research examines the relationship between intellectual development and collaboration in the student intern-cooperating teacher relationship. This examination is done through a set of interviews in which the SI or CT listens to a vignette and is asked how she would deal with the situation described. This causes the SI or CT to reflect on the vignette and formulate an answer. The answers of the SI and CT are compared for commonalities, references to each other, reflection, collaboration, and overall characteristics of the relationship. The answers are also matched to the intellectual developmental level. The nature of the SI-CT relationship has implications for preservice teacher training programs and perhaps cooperating teacher training as well.

Design of the Study

The research was conducted at a large public university in the Northeast with the student interns (hereafter referred to as SI), their cooperating teachers (hereafter referred to as CT), and their university supervisors (hereafter referred to as US). The SIs were engaged in a one-year internship at the end of which they receive their teaching certification. They are also matriculating at the University in a Master of Education program. There was a one-to-one correspondence between CT and SI. Each US supervised between two and 10 SIs.

To test the correlation between two measures of intellectual development, the PCM and WOKI were used. A Pearson $-r$ correlation was calculated with the women's scores on the PCM and WOKI, and a p-value was calculated.

To examine the relationship between intellectual development and collaboration, interviews were conducted with seven volunteer SI-CT pairs. Each person was interviewed twice, once in early November, 1995 and one in late January, 1996. An in-depth analysis of the interviews was conducted which analyzed in detail both interviews, and PCM and WOKI scores, for each of seven SI-CT pairs.

Organization of this Dissertation

Chapter Two of this dissertation is a review of the relevant literature. Chapter Three contains the details of the methodology, procedures, and methods of analysis. Chapter Four includes the statistical data on the correlations and p-values with analysis. Chapter Five discusses the analysis of the interview data for individual SI-CT pairs and summary information on CTs and SIs. Chapter Six contains a summary of the results and a discussion.

CHAPTER TWO

REVIEW OF THE LITERATURE

Introduction

The purpose of this chapter is to review literature relevant to the three major influences on this research: the conceptual matching model of David Hunt, the epistemological positions discussed in *Women's Ways of Knowing* (Belenky, Clinchy, Goldberger, & Tarule, 1986), and collaboration and reflective thinking in the SI-CT supervisory pair.

Each of these influences has a developmental base. Both Hunt and Belenky et al. were influenced by the work of Piaget, and Belenky et al. were influenced also by Perry (1970) whose theory of intellectual development was a stage-based theory. Glickman, Gordon, & Ross-Gordon (1995) emphasize a developmental approach to supervision, and collaboration and reflective thinking are used in supervisory relationships to promote development. Kohlberg & Mayer (1972), for example, discuss development as the aim of education. Each of the areas of this research discusses development through stages with a goal to enhance the practice of the student intern and cooperating teacher.

For example, Hunt's work (1971) evolved from work he did with Harvey & Schroder (1961). In his work, he discusses conceptual level and describes the levels as stages through which one advances. A person at an early stage is characterized as

reactive, negative, and impulsive, while a person at the most advanced stage of development is thoughtful, listens to and works with others, evaluates and makes a reasoned decision (Hunt, Butler, Noy, & Rosser, 1978).

The epistemological positions described by Belenky, Clinchy, Goldberger, & Tarule (1986) have similar descriptions at their extremes; silence is a position where a woman is dependent on an authority for direction and has no “voice” (pp. 23-25); constructed knowledge is a position where a woman considers the situation, who and what is involved, she listens and shares with others, and then she comes to an answer on a topic (pp. 144-146). By investigating hypothesis one, this research will determine if there is a correlation between Hunt’s PCM and Buczynski’s WOKI, the inventory based on the Belenky et al. research.

Collaboration and reflective thinking in a supervisory pair can take many forms. Reflection-in-action (Schön, 1983) is an event where, for example, a teacher is giving a lesson, notices that the students are looking at the clock, and adjusts the lesson to regain their attention and interest. This view of reflection-in-action is very similar to Hunt’s (1975) concept of “read and flex.” King & Kitchener (1994), discuss their “reflective judgment model” as having roots in the work of Harvey, Hunt, & Schroder (1961). Reflection-on-action (Garman, 1986) involves reviewing an action after the fact, most desirably in collaboration with a colleague or supervisor who can help the individual puzzle through the action and make some sense of it. The theory and practice of supervision emphasizes the collegial and collaborative nature of supervision and advocates that supervisors engage in reflective thinking with their supervisees (Garman,

1986, Glickman et al., 1995, Pajak & Seyfarth ,1983, Sergiovanni & Starratt, 1971 & 1993.)

In the following sections, each of these three major influences is discussed: conceptual matching model, epistemological positions of *Women's Ways of Knowing*, collaboration and reflective thinking in supervisory pairs.

Conceptual Matching Model

One of the major influences for this research is the work of David Hunt (1971, 1974) on Conceptual Matching Model and Conceptual Level (CL). The conceptual matching model is an interactive model that has its basis in Kurt Lewin's "classic formula, $B=f(P,E)$ " [Hunt (1971), p. 2], where behavior is a function of the interaction of a person and the environment. Kohlberg & Mayer (1972) discuss development in terms of interaction also: "for the interactionist, experience is essential to stage progression, and more or richer stimulation leads to faster advance through the series of stages" (p. 459). Hunt's (1971) CL theory is an outgrowth of the work he did with Harvey and Schroder on conceptual systems (Harvey, Hunt, & Schroder, 1961). In 1975, Hunt said that the conceptual matching model was an "example of the B-P-E paradigm" (p.187). Hunt stated that the interaction between teacher and student is always changing, as the person is affected by the environment. In a discussion of the B-P-E formula in 1975, Hunt said "In the classroom, the Behavior (learning) would be considered as determined by the Person (kind of student) and Environment (way of teaching)" (p. 187).

Hunt went on to define conceptual level in terms of three stages. “The sequence of stages can be summarized as proceeding from an immature, unsocialized stage (A) to a dependent, conforming stage (B) to an independent, self-reliant stage (C)” (Hunt & Sullivan, 1974, p. 209).

Hunt conducted a number of studies with teachers, students, administrators, and supervisors of teachers over a number of years. These studies evolved into a further refinement of Hunt’s theory published in Matching Models in Education in 1971 in which he discussed “models to coordinate student characteristics with educational environments, and describes how teachers can be trained to provide such environments” (p. v). This work began a series of studies by many researchers to determine if it were possible to match a student with a teacher, a teacher with a supervisor, or a student teacher with a cooperating teacher to provide for maximum learning, where “the objective of the conceptual systems matching model was to increase the person’s Conceptual Level” (p. 13). The discussion of matching introduced such concepts as “read and flex,” “accessibility channel” (p. 42), and providing for “optimal educational conditions” (p. 25). When Hunt (1975) discusses “read and flex” (p. 195), he means the ability of the teacher to understand the preferred learning style of her student, and adjust her teaching to meet the student’s needs. “Accessibility channel” refers to the learner’s cognitive openness or orientation through which the teacher can reach the learner. The “optimal educational conditions” concerns providing an environment that allows for cognitive growth.

Hunt's Paragraph Completion Method (PCM) has been used with teachers-in-training, practicing teachers, and supervisors of teachers, as well as with students in both high school and college. Many of the studies investigated the validity of using the PCM as a way to match teachers with students, supervisors of teachers with their supervisees, and cooperating teachers with their student teachers. All of these relationships can be described as mentor-protégé relationships. The purpose of matching is to encourage the maximum amount of growth on the part of the protégé. This matching requires that the mentor be able to "read and flex," that is, discern what the protégé needs and adjust the lesson or discussion to the appropriate level.

The Hunt studies reviewed in the next two sections have been split. Miller's review of research related to Hunt's work was published in 1981. A summary of Miller's review is included because it 1) shows the extensive use of Hunt's PCM over a number of years and 2) it provides the basis for reviewing the research since 1981 that relates directly to the research topic.

Research related to Hunt's work prior to 1981.

In 1981, Alan Miller reviewed 29 studies that were conducted from 1968 to 1978. In these studies, either the Harvey et al. (1961) Paragraph Completion Test (PCT) or the Hunt (1971) Paragraph Completion Method (PCM) were used to measure conceptual level. Miller chose these particular studies to review because they examined Hunt's "matching model" in some way. Miller grouped the studies into two general categories: studies that dealt with "interaction of CL and instructional mode" (p. 43) and studies that focused on "interactions of students and teacher CL" (p. 61).

The studies that looked at the interaction of CL and instructional mode were done with students in elementary school through preservice teacher training. They were designed such that students with low CL were given a structured method of instruction and students with a high CL were given an open and flexible method of instruction.

Miller grouped these studies into three more categories:

1. Social cognition and behavior
2. Affective response
3. Academic achievement

For the seven studies in the “social cognition and behavior (p. 43)” category, Miller reported that in one study CL was directly affected by instruction, and in the rest of the studies there were indications that differences existed in how high CL and low CL subjects handled structured and non-directed learning situations. The trend was for high CL subjects to prefer a flexible learning approach and for low CL subjects to prefer a structured learning approach. Miller reviewed seven studies in the “affective response” category. In these studies, the researchers explored subjects’ attitudes about a particular treatment condition. These studies used subjects that ranged in age from elementary school to college. Miller pointed out that there were many design problems with the studies reviewed in this section, but there were some interesting results. The problems were primarily design problems that did not allow for tight control of variables. In three of the studies, the results were either confusing or contrary to what conceptual systems theory posits. In two more of the studies, both high and low CL subjects preferred the low structure, high discovery learning environment, and high CL subjects self-reported greater learning with the discovery method. Another study reported that low CL

subjects preferred low structure and at the same time they recognized that they learned more in a high structure environment (p. 57). One study reported results consistent with conceptual systems theory where subjects with low CL scores preferred a highly structured learning approach, while subjects with high CL scores preferred a learning approach with low structure.

Miller reviewed 11 studies that he classified as related to “academic achievement.” The subjects were of high school and college age. Nine of the studies reported results that were consistent with conceptual systems theory while the other two had flawed designs so it was difficult to assess the results. Results of the nine showed that high CL subjects performed very well on complex tasks and integrated concepts and low CL subjects achieved higher scores after a structured situation. The results of one study showed that high CL subjects made greater gains in high structure situations than in low, in one section of the study. Miller believes that this result is contrary to conceptual systems theory which posits that high CL subjects should be able to adapt to any new learning situation. In another section of the same study however, the high CL students made greater gains in an adaptive learning situation, which is consistent with the theory. The differences in result may be due to the fact that the learning activities were very different, where the former involved learning by reading and the latter learning by speaking.

Based on his careful review, Miller concluded that there is a relationship between the type of instructional mode and CL. Students with a low CL, when matched with a

teacher who can adjust her style appropriately, exhibit some growth in CL and in academic achievement over time.

In the studies that examined the interactions of students' and teachers' CL, the subjects were of high school age and up. Miller reviewed these studies in two groups:

1. Student-teacher matching
2. Counselors-in-training and their clients

In the student-teacher matching studies, findings consistent with conceptual systems theory were reported in the four studies reviewed. Miller notes that there were some design problems with some of the studies. For example, the groups were heterogeneous, which is not an ideal condition for these types of studies. However, the results were clear enough to support conceptual systems theory. The studies with counselors-in-training and their clients also tended to support the theory while also noting some questions about design, particularly the lack of control for the "verbal intelligence variable."

Miller concludes his extensive review by stating that conceptual systems theory was generally supported in the studies he reviewed. He recommends that further studies examine gender differences. Most of the studies did not mention gender or put controls in place to examine gender differences. Miller (1981) states,

little attention is paid to sex as a variable...It is assumed that women exhibit the same kinds of cognitive structure, with the same dependence-independence conflicts as men and that the developmental sequences of both sexes are identical. This is doubtful in light of Hewitt's (1971) suggestion that prevailing measures of CL do not adequately represent the cognitive structure of women (p.75).

Since Miller's review in 1981, more studies have been conducted that use Hunt's PCM. In the next section, several articles are reviewed that relate specifically to Hunt's "matching model."

Research related to Hunt's work since 1981.

The studies reviewed in this section relate directly to this research study. The subjects in these studies are teachers, teachers in training, and their supervisors.

Hobart Hukill (1983) conducted a study to examine the results of matching student teachers with their cooperating teachers. His hypothesis was that matched pairs would show a greater gain in CL than unmatched pairs. Hukill's definition of "match" differs from Hunt's definition. The subjects for the study were initially 93 student teachers and 88 cooperating teachers. Of those, 67 pairs actually completed the study: 39 student teachers were from a large public university and 28 from a large private university. The former group were paired with teachers in a metropolitan school district while the latter were paired with teachers in a medium-sized urban school district. The metropolitan school district was referred to as the "lakeview" district in the study. The urban school district was "more culturally diverse" (p. 83) than the metropolitan school district, socio-economic status was consistent across the districts, and there were more students per teacher in the urban school district.

All subjects were given the PCM prior to and after the one-semester student teaching experience. Scoring was completed according to the scoring manual published by Hunt, Butler, Noy, & Rosser (1978). Scores on each paragraph stem range from 0-3

in increments of .5. The top three scores are averaged to form a CL score. Hukill reports that 78 of the subjects were considered mismatched and 66 were considered matched. (If pretest scores differed by more than .20 it was a mismatch). Results showed that the posttest CL for matched pairs increased and the posttest CL for mismatched pairs decreased.

The results of this study are problematic because Hukill's use of the terms match and mismatch differs from that of Hunt, the study was of short duration (one semester), the numbers he quotes do not add up, and it is not clear how many pairs were matched. (Note that this number totals to 144 while the total number of participants was 134). Hukill stated that a pair was matched if their CL scores were within .20 of each other, and mismatched if their CL scores were greater than .20 apart. Many researchers who used Hunt's PCM classified scores into three Modes (A, B, C) and discussed mismatches as scores which were more than .50 - 1.0 apart. Furthermore, Hukill did not take into account the direction of the mismatch. For example, Hunt (1971), discussed matching a student with a low CL score to a structured learning environment and a student with a high CL score to a "fairly unstructured, flexible" learning environment (p. 13). Continuing this paradigm, Hunt and later Theis-Sprinthall (1980) showed that matching a high CL cooperating teacher with a low CL student intern was a "productive mismatch", matching a high CL student intern with a low CL cooperating teacher was not productive.

Hukill reports that 78 subjects were matched, yet there were only 67 pairs. Perhaps some subjects did not take the posttest so that is the reason for the difference in

numbers. In spite of these questions, his results point to support for matching student teacher with cooperating teacher to promote CL growth of both the student teachers and cooperating teachers.

The current study has implications for investigating the second purpose of this research: to examine the relationship between intellectual development and collaboration. While the current research does not seek to match the SI and CT on the basis of CL score, CL is considered as a factor that influences whether or not the SI and CT can participate in reflective thinking and collaboration in the supervisory pair. The next study shows further confirmation that the CL of individuals in a supervisory pair influence the degree to which the pair is successful or that the individuals report that they are satisfied with the supervision.

A study conducted by Crehan & Grimmert (1989) examined whether or not workshop training in classroom management and supervision would have an effect on the success of the matched supervisory dyads of teachers and principals. This was part of a larger study conducted by the authors in which teachers and principals were placed into four randomly stratified groups of dyads. In the experimental group, teachers and principals attended both classroom management and supervision workshops. In one of the treatment groups, both principal and teacher attended the classroom management workshop, in another only the teacher attended the classroom management workshop, and in the final group, neither the principal nor the teacher attended either workshop. Since only the participants in the experimental group received both sets of training, the researchers were able to look at the effectiveness across different dyads. Success was

determined by a self-report of each participant. For the 1989 research, four dyads were selected. They were:

- High CL teacher-low CL principal
- High CL teacher-medium CL principal
- Low CL teacher-high CL principal
- Low CL teacher-low CL principal.

All subjects completed Hunt's PCM. The results showed that in the first dyad, the teacher with the high CL adjusted his behavior to the principal and the principal was able to provide the environment for the teacher to feel comfortable in exploring the questions and issues he had with his own teaching. In the second dyad, the results were essentially the same as the first. In the third dyad, the high CL principal adjusted his style and became more directive with the teacher after he tried to elicit comments from the teacher and that did not work. The teacher reported that the "supervisory relationship between herself and Brian [the supervisor] was satisfactory but not rewarding" (p.20). The final dyad was largely unsuccessful, as might be expected and as confirmed by Hunt's (1971) description of the low CL individual as "categorical, dependent on external standards, and incapable of generating their own concepts" (p.43). It is not surprising then that in this dyad meaningful conversations did not occur, were mainly cyclical in nature, with each member of the dyad showing inflexibility and a lack of attentiveness to the other. This was a well-designed and carefully conducted research study. For this reason, the results are clear and replicable. The results are supportive of the matching model which states that

Given the characteristics of low CL persons, (dependent on external standards and incapable of generating their own concepts), they should profit more from a highly structured approach. Given the characteristics of the high CL persons (capable of generating new concepts and holding internal standards), they should either profit more from low structure, or be unaffected by variations in structure (Hunt, 1975, p. 187).

Grimmett & Crehan (1990) investigated the aspects of teacher development that occur through supervision that is viewed as collegial and offers opportunity for reflection. The authors worked with one teacher-supervisor pair to examine the effectiveness of a supervisory style. The subjects for this study were a male teacher with 20 years of experience and a female principal/supervisor with eight years of experience as an administrator. In this case study, two classroom observations were completed by the supervisor, the subsequent conferences between the dyad were videotaped, and stimulated-recall interviews were conducted. The major result showed that the supervisor's collaborative approach with the teacher helped the teacher to reflect on his experience in the classroom and was the transformation necessary for improvement. The authors describe two episodes that occurred in the same conference. In one episode, the supervisor did not accept the teacher's statement of the problem and when she reframed it and posed another solution, the teacher did not pursue it. In the second episode, when the teacher described the problem, the supervisor accepted his statement of the problem and gave him the room he needed to reflect on his classroom management. The authors attribute the supervisor's new behavior to her ability to reflect on the previous episode and alter her behavior in the same conference. While she was collegial in the first episode, she did not accept the teacher's discussion of the problem. The authors conclude that "collegial supportiveness and acceptance of the teacher's designated area

of instructional concern thus constitute necessary and sufficient conditions for fostering teacher reflection in clinical supervision” (Grimmett & Crehan, 1990, p. 235).

This study would be stronger if it had been conducted over a longer period of time and there were structured feedback between observations and teacher-supervisor conferences. The longer period of time would be useful and would fit Thies-Sprinthall’s (1986) requirement of continuity [for growth]. Structured feedback between sessions might be most helpful here. Since the conferences were taped, there was a missed opportunity to conduct sessions with the teacher or principal or with them as a pair. This would have allowed the participants to watch their interaction and stop the videotape at moments they chose in order to comment on particular behaviors such as reflection, not listening, reframing, or restating incorrectly. This method of stimulated-recall interviews was effective in other research conducted by Struck (1993) in a training session that focused on collaborative problem-solving. Based on that experience, the current research employed the technique of transcribing the first interview, returning it to the SI or CT in advance of the second interview for their review, and then inviting comment on it at the second interview.

The case study method used in the Grimmett & Crehan (1990) study provides an in-depth view of one situation and can provide valuable insights that have been helpful in the design of this current research. The current research used vignettes taken from case studies as the interview vehicle to engage the SI and CT in thinking reflectively about what they would do in particular classroom situations. In the course of answering the questions, the SI or CT was asked probing questions about the degree to which they

discussed such issues with their partner in the supervisory pair. This type of inquiry allowed the researcher to understand whether or not the pair was engaged in collaboration and reflective practice.

Thies-Sprinthall (1980) conducted a study to look at what constitutes good (and bad) supervision of preservice teachers. Her study was done with preservice teachers and their university supervisors and looked at how supervisors evaluated preservice teachers, which is quite different from the supervisory pair collaborating with each other. Her study has implications for the current research because it found some interesting results with mismatched (in CL terms) supervisory pairs.

From a total group of 93 undergraduate student teachers, Thies-Sprinthall took the top and bottom 20% as measured by Hunt's (1971) PCM (score given as a CL number) and Rest's (1974) Defining Issues Test (DIT) which indicates an individual's stage of moral judgment in a score of principled thought (PT). The group for this study was 29 pairs of student teachers and their university supervisors. There were 14 matched pairs, five who were high CL and PT and nine who were low CL and PT. There were 15 mismatched pairs, 4 in which the student teacher was low CL and PT and the supervisor high, and 11 in the reverse condition. Supervisors were asked to rate the student teachers using the Supervisor Rating Scale; the student teachers' GPA was checked; and the Flanders Indirect Ratio of teaching effectiveness was determined from a score on a 20 minute videotape of their teaching. Thies-Sprinthall reported that student teachers of high CL and PT "are more flexible, more responsive, and more indirect than their low colleagues" (p. 18). According to Flanders, teachers are effective when they

employ the indirect mode of teaching which involves accepting feelings, praising or encouraging, accepting or using the ideas of students, and questioning students. The direct mode of teaching, the less effective mode, involves lecturing, giving directions and criticizing or justifying authority (Sprinthall, Sprinthall, & Oja, 1994). In the mismatched group in which the student teachers were high CL and PT and the supervisors low, the supervisors scored the student teachers as average or below on the Supervisor Rating Scale, while the Flanders objective measure showed that these high CL and PT student teachers “performed well” (p.19). Thies-Sprinthall proposes that “supervisors who themselves are at modest levels of psychological development may mis-perceive or misunderstand the teaching performance of more developmentally advanced student teachers” (p. 19). The ratings by supervisors (both low CL and high CL) for student teachers who were low CL were about the same, even though by the Flanders’ measure, the low CL-PT students paired with the high CL supervisors used more indirect methods in their teaching than the other students. High CL-PT matched pair results were consistent with conceptual systems theory. Thies-Sprinthall advocates for developing programs that would serve to increase the developmental level of supervisors that would in turn avoid negative or “mis-educative” supervision experiences.

Much of the research discussed up to now deals with either preservice teachers and their university supervisors or inservice teachers and their in-school supervisors. The relationship between the preservice teacher and the cooperating teacher is a very influential one for the preservice teacher. The cooperating teacher provides the introduction to their first teaching experience in the school, the pair spend many hours together, they share information frequently during the day, and they are together over a

period of time that spans one semester to a full school year. The current research deals with SIs who are engaged in full-year internships.

Griffin, Barnes, Hughes, O'Neal, Defino, Edwards, & Hukill (1983) at the University of Texas at Austin conducted a study with student teachers (ST), cooperating teachers (CT), and university supervisors (US) over the period of a one-semester. Most of the student teachers were enrolled in elementary education (43.2%), liberal arts (25%), and special education (12.5%) (p. 59). The researcher's goal was to understand the relationship among the ST, CT, and US. The subjects for the study were drawn from two universities, one public and one private. There were 93 STs, 88 CTs, and 17 US'. Griffin et al. administered a number of instruments including Hunt's (1971) PCM at the beginning and end of the semester. They divided the group of subjects into two, one of which they called intensive and the other general. The intensive group was selected by recommendation of the university and school districts who identified "effective" cooperating teachers. Each university recommended 10 CTs. Once the selection process was complete, the sample was the following:

Table 2: Griffin (1983) et al. Study

	Public University		Private University	
	Intensive	General	Intensive	General
	n	n	n	n
ST	10	34	10	39
CT	10	33	10	35
US	5	8	4	0

The supervisors from the public university were part time graduate students and the supervisors from the private university were employed full time by the university and the school districts.

CTs' and STs' conceptual level scores were very close on both the pretest and posttest with no significant changes noted. The US scores were higher than both the CT and ST, with no significant change over the semester. Audiotapes were made of all conferences in which the ST-CT pair engaged and of these 76 were coded and analyzed. Five audiotapes of the ST-CT-US triadic conferences were coded and analyzed. The analysis showed that ST-CT "conferences were dominated by CT talk. Thus, these conferences do not seem to have exemplified cooperative planning sessions, nor a sense of shared professionalism" and "conferences seemed to reflect a teacher-pupil relationship between ST and CT rather than a collegial one" (p. 190-91). This study was

well formulated and implemented. The number of participants in the intensive section of the study (20 triads totaling 49 participants) produce a good database from which to draw some inferences and implications. Based on the results, Griffin et al. believed that the results showed that the student teachers needed explicit goals, but that the cooperating teachers and university supervisors also needed to elicit more from the student teachers and to clarify expectations of the student teachers in terms of greater participation in planning and the eventual goal of shared professionalism.

The current research has not undertaken the job of taping conferences with ST-CT pairs, rather the method employed is to conduct an interview centered on vignettes with each SI and CT individually. One of the reasons that this choice was made was to allow each SI and CT her own opportunity to discuss issues and challenges that she may be facing both in the classroom and with her partner in the pair. The researcher then needs to “make sense” of the relationship from the individual interviews.

Studies on full-year (two-semester) student interns and cooperating teachers were done by Frane (1992), and Oja, Chamberlain, Moran, & Struck (1993). These studies were part of a larger study and whose goal was to “explore interns’ attitudes toward their supervisory needs during the internship” (Oja et al., 1993, p. 2). There were 154 SIs who participated in the larger study by taking Hunt’s (1971) PCM. One school was identified, and its SIs and CTs were requested to participate further in the study. Eight of those SIs agreed to be interviewed at the beginning of the study and retake the PCM at mid-year. Their CTs agreed to take the PCM and be interviewed at mid-year. Results showed that seven of eight SIs increased in CL over the first five

months of internship. High CL cooperating teachers were better able to “read and flex” to the needs of their SIs than moderate CL cooperating teachers. The CTs reported that they saw their relationships with the SIs as moving from teacher-student, to mentor-protégé, to collaborative partnership, and the beginning of a continuing friendship. The authors recommended that future studies should include interviews, as well as an examination of the extent to which the “CL mode of the intern and cooperating teacher make a difference in the supervisory relationship” (p.17).

The studies by Frane (1992), and Oja et al. (1993) influenced the current research by showing the value of individual interviews with the SI and the CT.

Epistemological Positions of Women’s Ways of Knowing

In 1986, *Women’s Ways of Knowing* (Belenky, Clinchy, Goldberger, & Tarule) was published. This book was the result of research conducted by the authors with 135 women. The women were from diverse academic and socio-economic backgrounds and they represented women from teenage years through early 20s. Each interview began with the question “Looking back, what stands out for you over the past few years?” (p.11). The results of the research led the authors to identify five “epistemological perspectives from which women know and view the world” (p. 15). The perspectives are silence, received knowledge, subjective knowledge, procedural knowledge, and constructed knowledge. Belenky et al. left it to later theorists and practitioners to decide if the perspectives could be viewed as stages (p. 15).

Silence is the position that Belenky et al. (1986) characterized as one where a woman takes direction from an “authority” and is seen as not having a “voice.” The

authors found only two or three women at this position at the time of the interviews, but many women described experiences in the past that would have positioned them at Silence. At the second position is a Received Knower who relies on external experts to tell her what to do. A woman at this position is beginning to discover her voice. She receives knowledge, uses it, and passes it on to others.

The third position is Subjective Knowledge. A woman at this position begins to listen to her “inner voice” rather than an authority. She begins to rely on her own judgment but she is still not sure if there is a “right answer.” She becomes her own authority. A Procedural Knower is one who reasons, who looks at issues from many perspectives, and begins to “know.” Belenky et al. defined procedural knowledge as having two parts: separate and connected. Separate procedural knowers tend to be analytical in their evaluation and follow particular techniques or rules to investigate a problem or issue. Connected procedural knowers are concerned with understanding others, feeling what others feel, in their investigation of a problem. Finally, Constructed Knowing is the position where a woman considers the situation, who and what is involved, she listens and shares with others, and then she comes to an answer (pp. 144-146).

The Women’s Ways authors found some basis for their work in the work of William Perry, who during the late 1950s and early 1960s interviewed male Harvard undergraduates. Perry’s interviews began with the question “What do you think has influenced you most during the year?” (1970, p.19) As a result of his work, he defined a “chart of development that contained nine positions. The first three positions were

grouped under the heading of “the modifying of dualism”, the middle three positions under the heading of “the realizing of relativism”, and the final three positions were grouped under the heading “the evolving of commitments.” While Perry stated that these were not stages, when he drew the schematic representation, he drew it as a “main line of development” (p. 9) which began at the dualism position and progressed towards commitment at Position 9.

Ways of Knowing Inventory (WOKI).

The WOKI is a 49-item questionnaire with a “four-point Likert type scale, ranging from ‘strongly disagree’ to ‘strongly agree’” (Buczynski (1993), p. 198). As mentioned previously, the WOKI is based on the work of Belenky (1986) et al. on epistemological perspectives of women. Buczynski developed the WOKI to contribute an instrument that looks at developmental characteristics generally found in women (Buczynski, 1993, p.1), and one that would be easy to administer. The method of Belenky et al. (1986) was an interview protocol taking one to two hours or more. A paper-and-pencil measure, if proven to be valid and reliable, would greatly simplify the investigations of developmental stage and growth. Buczynski was encouraged by the results of her 1993 and 1995 investigations of the 49-item WOKI which takes 20 minutes to administer and is objectively and easily scored.

A respondent selects an answer from a four-point Likert Scale as follows:

Strongly Disagree	Somewhat Disagree	Somewhat Agree	Strongly Agree
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Scoring the items is done according to the following points:

- Strongly Disagree - 1 point
- Somewhat Disagree - 2 points
- Somewhat Agree - 3 points
- Strongly Agree - 4 points

Items on the WOKI are grouped by epistemological position as discussed in *Women's Ways of Knowing* (Belenky, Clinchy, Goldberger, & Tarule (1986)). The following table shows the epistemological positions, item numbers related to the position, the total number of items for each epistemological position, and maximum possible score.

Table 3: Ways of Knowing Inventory Scoring

Epistemological Position	Item Numbers	Total Number of Items	Maximum Possible Score
Silence	1, 2, 3, 4, 12, 19, 20, 30	8	32
Received Knowledge	10, 13, 33, 36, 40, 41, 42	7	28
Subjective Knowledge	14, 15, 16, 17, 31, 44, 45, 46, 48, 49	10	40
Procedural Knowledge	5, 6, 8, 9, 11, 18, 21, 22, 24, 27, 28, 29, 32, 37, 39	15	60
Constructed Knowledge	7, 23, 25, 26, 34, 35, 43	7	28
Total Items		47	

Item numbers 38 and 47 are omitted from the scoring based on previous research (Buczynski, 1993) conducted by the author of the WOKI. Those items were found to be independent from the epistemological positions and were therefore omitted from further scoring.

In 1993, Buczynski conducted the initial study using the WOKI. There were 348 white women students, 95% of whom were undergraduates, participating in the initial study. The age of the students was 18-25 and the mean age was 22.78. Of the undergraduates, the predominant group were first year students at 41.7% of the sample; sophomores were 9.615%, juniors were 21.15%, and seniors were 22.4%. All students completed the WOKI in small-group situations. The factor analysis showed that the five factors of silence, received knowledge, subjective knowledge, procedural knowledge, and constructed knowledge were present. The author also did alpha internal reliability coefficients and these were in acceptable limits. The conclusions point to support for the five factors in intellectual development for women. Further, the author recommended that more analysis be carried out and future samples be larger and more ethnically diverse.

Buczynski (1995) followed her earlier study by performing a “confirmatory factor analysis” on the WOKI. Using the scores from the previous study, Buczynski hypothesized a model of the five subscales on the WOKI (silence, received knowledge, subjective knowledge, procedural knowledge, and constructed knowledge) and “confirmed the model via a LISREL analysis” (p. 7).

The WOKI was chosen for use in the current research study of cooperating teachers and student interns because:

- It is a measure based on women's intellectual development
- It is an easy to administer, paper-and-pencil measure
- The population from which this sample was drawn is predominantly women
- Eighty percent of the student interns in this particular program are women
- About the same percentage of cooperating teachers are women

If it can be shown that there is a correlation between the PCM—a well-established measure of intellectual development used in education—and the WOKI—a new measure of intellectual development, then it may be worthwhile to use the WOKI with larger samples and investigate its' usefulness as a way to understand the relationship between SIs and CTs.

Collaboration and Reflective Thinking in Supervisory Pairs

The second purpose of this research is to examine the relationship between intellectual development and collaboration in the student intern and cooperating teacher supervisory pair. As Hunt and Belenky et al. define their more advanced stages of development, they describe a person who can talk with others, connect with others, discuss and think about topics, share views, disagree and compromise, and finally make a decision. These elements are descriptive of their Mode C (as in Hunt's terminology) or Constructed Knower (as in Belenky et al. terminology).

For example, an answer to the sentence stem "When I am not sure.." that Hunt et al. (1978) describe as worthy of the highest score is:

I try to see as many sides of the situation as one person is capable of. I get other people's opinions. I talk them over with those who are important to me. I think for a while. I agonize for a while. I oscillate. I finally choose when the decision finally starts to feel right inside me. Then I usually have afterthoughts but am basically glad of my decision, and I live with it. (p.28)

Belenky et al. (1986) describe a constructed knower as one who participates in real talk:

Really talking requires careful listening; it implies a mutually shared agreement that together you are creating the optimum setting so that half-baked or emergent ideas can grow. "Real talk" reaches deep into the experience of each participant; it also draws on the analytical abilities of each. (p.144)

Both Hunt (1971) and Belenky et al. (1986) are describing learners and knowers who are reflective thinkers, who can listen, who can share, and who can collaborate. The interviews done as part of the current research study seek to test whether there is a relationship between collaboration and intellectual development as seen with SI-CT pairs. The interviews require the respondent to reflect-in-action during the interview, reflect-through-recollection when reading the transcript, and describe the workings of the SI-CT relationship. The following section reviews the literature by looking at some relationships between collaboration and supervision and, then, reflective thinking and supervision.

Collaboration and Supervision.

The recent literature on supervision in an educational setting often turns to a discussion of how teachers and their supervisors work together, or collaborate. See, for example, Colton & Sparks-Langer (1992), Glickman et al. (1995), Grimmer, Rostad, & Ford (1992), Pajak (1990 & 1993), Pajak & Seyforth (1983), Sergiovanni (1982), Sergiovanni & Starratt (1971 & 1993).

Glickman, Gordon, & Ross-Gordon (1995) discuss collaboration as one of three strategies a supervisor can use in a relationship with a supervisee. Thies-Sprinthall (1986) designed a training program around a “collaborative approach” in supervision. What is collaboration? Griesel (1992) and Kraus (1980), as well as many others, have discussed collaboration and collaborative problem-solving. My working definition of collaboration is based on both my experience and a synthesis of key elements in the literature I have read on this topic. Collaboration is a process in which two or more people have a shared goal to work together. During collaboration, individuals share information, power, collective wisdom, leadership, influence, and strengths and weaknesses. They are willing to compromise, to take risks, and they trust and can be trusted. In terms of skills, individuals listen, synthesize, summarize, evaluate, restate, and bring discussion to a close and a conclusion using consensus. In collaboration, decisions are made by consensus, where consensus (Ashley, 1993) is defined as the *opportunity* for each person to participate in the decision making and where each person agrees to test the outcome.

One of the early works of Sergiovanni & Starratt (1971) discusses supervision as a process in which the supervisor has a responsibility to achieve a goal and depends on the supervisee to achieve the goal. In order for the relationship to work, the supervisor, who has the power, must have confidence in her subordinates, good leadership skills, and be self-assured. The supervisee must have some independence, be ready to assume responsibility, tolerate ambiguity, be interested in the problem, and share decision-making (pp. 85-86). The pair must be able to work together to be successful.

Glickman, Gordon, & Ross-Gordon (1995) have defined a “supervisory behavior continuum” (pp. 158-159). Along the continuum are seven steps: clarifying, listening, encouraging, reflecting, presenting, problem solving, negotiating, directing, standardizing, and reinforcing. This is not a linear process; for example, listening is something that must be done throughout the entire conference. Depending on the skill of the supervisor and the developmental level of the supervisee, the supervisor chooses a directive, collaborative, non-directive, or collaborative/non-directive style of supervision. The latter style is one that Glickman et al. advocate when a supervisor works with a group of teachers who are involved in peer supervision (p. 181).

Thies-Sprinthall (1986) discusses a mentor training program that was introduced in North Carolina as a result of a law requiring that new teachers serve a two-year probation before they become certified. The design of the program was based on three assumptions: the mentor teacher (a classroom teacher) would receive intensive training, the training would occur at the mentor’s school and would be long-term, and the training would be based on theory and research (p.15). Thies-Sprinthall met with two Local Education Agencies (LEA) and designed a two-semester practicum of three hours per week for 45 weeks. Each of these LEAs identified two person teams who were then invited to participate in the training. At the outset, Thies-Sprinthall met with each participant in what she called a “relationship-building” conference. These conferences were taped, Thies-Sprinthall “clarified the content and feelings presented” (p. 16) and returned the tape to the participant for reflection. Over the course of the semester, the training covered: building a helping relationship, effective teaching, models of supervision and coaching, differentiated supervision, problem-solving, and ending a

relationship. In the second semester, the participants began a supervisory relationship with a student teacher, a beginning teacher, or a peer. In the second year of the program, one pair of participants from one LEA and two pairs of participants from the other LEA began their own two-semester inservice training program for 12-14 teachers. During this period, it was evident to Thies-Sprinthall that the original participants were collaborating with their colleagues.

Results of this study showed that the original participants (who became trainers in the second year) reported growth in their teaching practice and understanding of mentoring. Teachers who became mentors noticed that their teaching improved, their effectiveness as supervisors improved, they formed collegial relationships with other teachers, and they became more confident as mentors. The beginning and student teachers (those who were mentored), reported that the mentors were helpful with “personal concerns, classroom management, organizational issues, and understanding of the induction sequence” (p. 18). This result is consistent with that of Russell, Munby, Spafford, & Johnston (1988). On the basis of these results, Thies-Sprinthall expanded the training to additional school systems.

The current research has taken an approach similar to that of Thies-Sprinthall. Interviews are transcribed and returned to the SI and CT for their reflection and then discussed in a subsequent interview. Thies-Sprinthall (1986) makes a good case for teacher growth as a result of the kinds of training and experience they received working with colleagues in a supervisory relationship.

In 1982, the Association for Supervision and Curriculum Development (ACSD) published a yearbook entitled *Supervision of Teaching*. Alfonso & Goldsberry (1982),

Eisner, (1982), Garman (1982), McNeil (1982), Sergiovanni (1982) are all contributors to the yearbook. Garman, Eisner and McNeil discuss the clinical, artistic, and scientific approaches to supervision and Sergiovanni attempts to integrate those views into a “supervisory practice.” Alfonso & Goldsberry discuss using colleagues to enhance development.

The traditional view of clinical supervision has been that of the supervisor providing a service to the teacher, where the service is focused on quality of the teacher’s practice (Garman, 1982, p. 35)). Supervisors in this sense have been detached and analytical when evaluating the teacher’s practice, and according to Garman, they have generally been “itinerant.” She offers additional elements to the role of the clinical supervisor: *collegiality, collaboration, skilled service, and ethical conduct* (p. 35). Garman believes that in order for the supervisor to be successful, she must become connected to the work and the teacher whom she is supervising. Together they can work on improving practice.

Eisner (1982) takes an artistic view of supervision, wherein the supervisor attends not only to what is being said, but how it is said, and how people feel about it. He looks for detailed descriptions of events so that he can be an effective supervisor.

McNeil (1982) on the other hand, takes a scientific approach to supervision. The teacher plans a lesson, delivers the lesson, and then gives a test which measures whether or not the students understood. The teacher’s goal is to monitor performance of the students. As a result, the supervisor’s goal is to ensure that the teacher has met his objectives, and the teacher’s performance is measured accordingly.

In looking at the clinical, artistic, and scientific approaches to supervision, Sergiovanni (1982) believes that the supervisor must ask the questions: What is going on in this classroom?, What ought to be going on in this classroom?, and What does it mean (p. 68)? Sergiovanni believes that the scientific approach should allow for the answers to what is and what ought, and the artistic approach can give meaning through detailed description. But it is through the clinical approach to supervision as Garman (1982), Glickman et al. (1995), and Thies-Sprinthall (1986) present it, that the approaches come together and complement one another. If a supervisor uses the scientific approach to determine the “what is” and the artistic approach to determine “what ought to be”, then she can use the vehicles of collaboration, collegiality, skilled practice, and ethical conduct to establish a relationship with the teacher that allows for an open discussion that leads to growth.

Alfonso & Goldsberry (1982), writing in the same yearbook, caution that people acting in the supervisory role must be trained in techniques of observation and critique in order to be successful. For collegiality to work, there must be a shared authority and responsibility, both characteristics of collaboration as defined in this research.

Sergiovanni joined the clinical, scientific, and artistic approaches to supervision into a holistic view of supervision, which is the kind of approach suggested by Glickman et al. (1995). Likewise, Alfonso and Goldsberry advocate a collegial approach to supervision. Collegiality and reflection were foci of the question Glickman (1992) challenged authors to respond to for the 1992 ACSD yearbook.

The 1992 ACSD yearbook is entitled *Supervision in Transition*. Carl Glickman, who is the editor for 1992, asked the authors of the articles to respond to the following:

Over the past decade, school supervision has been in the midst of swirling, transitional views. One view of supervision—as a district-based, inspector-type function carried out by line supervisors who understand generic processes of teaching—has gained ascendancy. A shifting view of supervision as a school-based collegial process, based on reflection, uncertainty, and problem solving, has been finding acceptance in schools that are recasting the roles and responsibilities of teachers. A further area of shifting views has been from an emphasis on pedagogy to a focus on the interaction of content (subject knowledge) and instruction. These transitions in supervision have created volatile issues, tugging at the security of people's professional lives, and changing previous organizational structures. The 1992 yearbook intends to bring fresh insights from the varying perspectives of theorists, researchers, and practitioners to inform those who will decide and implement programs of supervision for the 21st century (pp. 2-3).

Colton & Sparks-Langer (1992) discussed the restructuring of student teaching experiences in response to Glickman's challenge. They believe that the goal of student teaching should be to produce a *thoughtful, self-directed professional* (p.155). Using "guided participation", the authors believe that a supervisor can help the student teacher grow and develop as a professional. Guided participation is a process where "an experienced mentor assesses the level of the beginner and gradually moves him to higher levels of cognitive functioning" (p.158). Colton & Sparks-Langer (1992) designed a four day training in supervision for teachers. Once the training is complete, and during the supervisory period, supervisors meet in groups monthly with trainers and individually before and after observation conferences. They also designed the student teaching experience of 15 weeks to have three components: five weeks of observation and assisting in the classroom, five weeks of teaching between one and three class periods a day, and five weeks of teaching all day, every day. Student teachers are encouraged to write journals which are reviewed by their supervisor. This structures time for the students teacher to reflect on classroom events. Results showed that supervisors need

good interpersonal skills, they need to model good practice, and they need to discuss issues with student teachers in context (p. 166).

The practice of journal writing is advocated as part of the teacher education program in which the current research was conducted, but the practice is not universal among the SIs or the CTs. Developing a self-directed professional as an outcome of teacher training is a critical goal. One way to reach that goal, as has been discussed throughout this section, is through collaboration with peers and supervisors or mentors, and engaging in reflective thinking.

Similar conclusions are drawn by Grimmer, Rostad, & Ford (1992) in a discussion of the “transformation of supervision.” They ascribe to the basic premise that “*teacher development takes place within a culture of interdependent collegiality when teachers reflectively transform their classroom experience*” (p. 186). They cite a case study of a teacher and principal-supervisor. The principal-supervisor created a supportive atmosphere for the teacher and together they discussed the issues in context, allowing the teacher to reflect on classroom events and later adjust his teaching methods.

The next section deals specifically with reflective thinking and supervision.

Reflective Thinking and Supervision.

In recent years, there has been much research on reflective practice as it relates to teaching and teacher training. Work done by Schön (1983, 1987) has been very influential for educators. Schön first wrote in 1983 on what it is that professionals do when they are confronted with a situation that surprises them in some way. He labeled their response to the surprise as “reflection-in-action.” He later refined his definition of

reflection-in-action (1987) as “an *action-present*—a period of time, variable with the context, during which we still can make a difference to the situation at hand—our thinking serves to reshape what we are doing while we are doing it” (p.26). He describes the sequence of events that reshape “what we are doing” as the following: a professional does something—takes an action, notice when something unexpected occurs, thinks about it—reflects on it, experiments—takes a course of action. It is possible that the reflection-in-action becomes an iterative process as the professional experiments, something unexpected occurs, and the process repeats itself. He gives an example of what might happen with a teacher in the classroom as she is following her lesson plan. The teacher presents a lesson, listens to her students and something unexpected occurs, and the teacher asks herself:

...why does he write ‘ $36+36=312$ ’? As she begins to understand how he thinks about the task, she may invent new questions, new activities for the student to try and new ways of helping him learn addition. The lesson plan must be put aside then, or else it must become a rough ground plan for action, a skeleton around which the teacher develops variations according to her on-the-spot understanding of the problems of particular students (Schön, 1983, 333).

It seems that several teacher characteristics are important if a teacher is to be successful at reflecting-in-action. The teacher must be self-assured and confident, and know her subject matter well to be able to handle the unexpected and go with it. The teacher must not be looking for the one “right answer”, and she must be able relinquish control of the lesson and engage in a learning partnership with her students.

As Schön describes reflection-in-action, it is mindful of Hunt’s description of “read and flex”, where Hunt describes a teacher adjusting her teacher style to the learner

in the moment of the lesson. A teacher with a high score on Hunt's PCM would be expected to be able to "read and flex" and it seems, reflect-in-action. SIs and CTs who participated in the interviews for the current study were asked to reflect-in-action and reflect-through-recollection during the interview, and reflect-on-action when they received the transcript of the interview.

Garman (1986) discusses two additional types of reflection, reflection-on-action and reflection-through-recollection, as being important to the practice of clinical supervision. She cites three major sources of the practitioner's knowledge: mythic knowledge, craft knowledge, and inquiry knowledge. Mythic knowledge encompasses the beliefs that a teacher has about education and how it should be practiced; craft knowledge includes the rudiments of how one is supposed to teach, and inquiry knowledge refers to knowledge that one obtains by engaging in research. The different types of knowledge form the backdrop for how one imparts knowledge, either by application or reflection. If a teacher uses the application approach, then she develops a plan and executes it. If a teacher uses the reflection approach, then she will "plan, act, reflect, evaluate" (p.14).

The process for reflection-on-action includes: involvement in a scenario, a record of a scenario, the meaning of the data, the educational construal, and confirmation (Garman, 1986, pp. 15-16). Thus, if a teacher has a good record (a videotape or audiotape) of an event that occurred, then she can examine the record and attempt to make sense of it, derive some meaning from the record, and then share the meaning with other teachers or supervisors to see if the meaning has some generalizability. The key

difference between reflection-on-action and reflection-through-recollection is that for the latter there is no record of a specific scenario, rather the teacher recalls more than one event or image of an occurrence and attempts to make meaning of it. Both reflection-on-action and reflection-through-recollection have a place as a learning strategy for teachers. Reflection-through-recollection is less precise, but has the advantage of allowing the mind to wander freely while conjuring images of a classroom situation or experience in the past.

Garman concludes her discussion by noting that the first step towards reflective practice in a school may be for teachers to work together. A teacher may take on the role of clinical supervisor for another teacher as a way to enhance her own abilities to reflect on her practice. The teachers in the pair may then reverse roles so that each has the opportunity to “clinically supervise” the other, but more importantly to develop skill at reflective practice. It is this type of relationship that is examined as the second purpose in the current research, although the relationship is between a student intern and a cooperating teacher, not peer teachers.

An example of the use of reflective practice in a clinical supervision situation is illustrated in a case study conducted by Grimmert and Crehan (1990). The case involves a teacher with 20 years of experience and his principal-supervisor, who has eight years of experience. There were two cycles of observations, conferences were videotaped, and the authors used stimulated-recall interviews to help in understanding the information. The teacher described is task-oriented. His classroom interactions were characterized as warm and friendly. The supervisor was very supportive and relaxed in the conferences

and she used the term “we” to identify her teaching strategy with the teacher’s. The principal provided the environment in the supervision sessions that allowed the teacher the opportunity to reflect on events in his classroom. For example, the teacher wanted to work on his classroom management technique. The supervisor was very supportive and approached the conferences in a collegial manner. The second conference was the more successful of the two because the principal allowed the teacher to present and frame the problem in his own way and then the pair reflected on and explored the problem together.

This study is relevant to the current research for its reflective and collaborative nature, but it also concerns an inservice teacher and the principal as supervisor, unlike the current research which concerns a preservice teacher and cooperating teacher.

In a case study on reflection-in-action (Turner-Muecke, Russell, & Bowyer, 1986), the interactions between a faculty supervisor and student teacher were analyzed. The faculty supervisor was a teacher with nine years of classroom experience, four years of experience as a cooperating teacher, and one year experience as a faculty supervisor. The student teacher had a Master of Arts in English and had previous experience as a teaching assistant. The faculty supervisor made seven weekly visits of 50 minutes each. After the first week there was no supervisory conference, but there was a conference after each of the subsequent weeks. The conference occurred on the same day in four of the weeks, and later in the week in two of the weeks. The student teacher had stated her goals as being able to teach the content, test student comprehension, and be aware of how she distributed her attention to individual students. The pair initially discussed

keeping a journal, reflection-in-action, mutual inquiry, and clinical supervision. Over the first few weeks, the supervisor began to feel that the student teacher was not truly interested in her previously stated goals. Further, the student teacher provided little response to the supervisor's prompting to discuss events that had occurred in the classroom. This eventually led the supervisor to reflect on the conferences and talk with the student teacher about the efficacy of the conferences. To the supervisor's surprise, the student teacher indicated that the conferences were very helpful and caused her to reflect on classroom events. This case study showed the effectiveness of reflection-in-action from two points of view: 1) between student teacher and supervisor and 2) for the supervisor herself. The reflection-in-action in the pair took form after the supervisor questioned the effectiveness of the conferences (reflection-through-recollection). The supervisor herself reflected on her own behavior in the conferences and she was able to begin to understand her own supervisory style and the biases she brought to the conferences which may influence her observations. When the open dialogue occurred, the conferences began to improve. This point relates to a discussion of "authentic supervision" by Pajak and Seyforth (1983). They advocate direct, open communication between supervisor and teacher, as well as the need for supervisors to attend to personal needs in the supervisor-supervisee relationship.

It is not surprising that it took a few weeks for the pair to realize that the relationship was a fruitful one. This is noteworthy particularly in view of the fact that some student teaching experiences, such as this one, are one-semester or less. Note also that communication was an issue in the study, thus relating closely to the current research which has a focus on how well the SI-CT pair collaborate with each other. In

order to collaborate, reflect, and have a successful supervisory process in which the pair can grow, open communication is essential. Often cooperating teachers do not have sufficient training in supervisory practices and in conferencing skills, which cause difficulties in supervisory relationships.

Browne (1992) examined the role of classroom teachers as educators of teachers and reported on a workshop developed for cooperating teachers. She noted that cooperating teachers receive little or no training, they are often not included in the decision-making, and they often receive little or no compensation. At the same time, they are expected to open their classroom to the student teacher, model good teaching behaviors and strategies, and share their space and their expertise. In her research, Browne worked with eight school districts with student populations varying from 812 to 8140 students from rural and urban communities. Three representatives from each district were appointed to the clinical advisory board. It was the role of the board to recommend the areas in which teachers needed further education and training in order to be successful cooperating teachers. The result was a clinical workshop which emphasized peer interaction and group discussion and covered the following topics: orientation of field experience students, conferencing and communication skills, integrating field experience students into teaching, encouraging reflection through analysis of observation and written plans (p.33). The training had the desired effect in that teachers assumed an increased leadership role in the field experience program. This had many benefits: cooperating teachers felt more valued, the program was characterized as collaborative. The program benefited from the expertise and

involvement of the teachers, and it gave teachers an enriching experience that allowed them to stay in the classroom yet learn and contribute in new ways.

Two separate articles on the five year teacher education program at the University of New Hampshire, Oja (1990-1991), and Oja, Diller, Corcoran, & Andrew (1993) report on the full-year internship begun in 1974 and the ongoing onsite training of cooperating teachers and collaborators in supervision begun in 1985. In the internship phase of the five year program, student interns are placed in “cluster” sites, where there are at least three and up to six interns. In these cluster sites, the student interns (SI) have the benefit of interacting with other SIs and CTs. The cooperating teachers (CT) act as a collaborative supervisory group meeting monthly at the school site to investigate supervisory practices. The university supervisor meets with them on a regular basis to facilitate collaborative inquiry into issues and strategies of supervision. CTs involved in the program to develop supervisory skills reported that they shared goals and expertise with each other, they provided support for each other and created an atmosphere in which individuals could take risks. The CTs reported that they felt less isolated and the sharing and support they received in the supervisory group was important. Oja et al. reported that a goal of the five year program is to produce a teacher as an autonomous decision maker within communities of inquiry and support and to achieve that goal, the student intern must take an active role with her colleagues in evaluating, reflecting on, and improving her own teaching. They viewed the SI, the CT, and the university supervisor as “co-explorers” in this process (p. 14).

In a two year study of how teachers “learn practical, professional knowledge of teaching” (Russell, Munby, Spafford, & Johnston, 1988), 13 teachers were interviewed at regular intervals (generally monthly). The interviews took place just after an observation. The sample included three preservice teachers, four teachers in the first year of teaching, two in “early years”, and four had been teaching for a “number of years.” The authors were looking specifically for the metaphors that teachers used in describing the events in their classrooms. Some of the research questions were: What metaphors do teachers use?, Are the metaphors different for the different groups of teachers in the study?, Do the metaphors change over time and if so, why? The general result of this study showed that teachers who were new were looking for practical information on how to get their jobs done. As teachers matured in their profession, they were more likely to think about what they were doing and how they might improve or change their practice. Furthermore, these teachers engaged in discussion about their work that was very much like reflective practice, although they had no formal training or experience with reflective practice. The authors conclude by describing a relationship between reflective practice and collaboration:

As we continue to talk with teachers and explore their understanding of their work, we better understand the role of the reflective process in learning the professional knowledge of teaching. We are also reminded of the value of collaboration. The presence of an interested, non-evaluative colleague appears to stimulate many teachers to reframe their interpretations of classroom events and to become more aware of how they learn from their experiences of teaching (p. 88).

Kilbourn (1988) describes situations that occur in classrooms as a way of using reflection-on-action to understand what has taken place and to devise some new actions. This is the type of experience that would be expected to occur in the SI-CT pair. For

example, he describes a vignette in which the teacher presents a unit on heat conduction. When the teacher asks for “other conclusions” from the experiment, a student responds with an unexpected answer. The teacher acknowledges the answer, but moves on with little discussion. In a reflection-on-action of this vignette some questions might be: Why did the teacher move on? Is he unsure of himself? Was this an unexpected answer? Was this the “wrong” answer? The vignette relates back to Schön’s view that teachers who can reflect-in-action must be able to deal with the unexpected, be open to discussion, “let go” of the “one correct answer” thinking, and allow himself to explore with his students.

Lee Shulman (1988) notes that a key to Schön’s ideas on reflection-in-action is that the teacher be able to do just what Kilbourn’s teacher did not do. The reflection-in-action teacher gives credence to the student’s idea and allows space for exploration. To this end, Shulman called for developing teacher education programs around case methods to aid teachers to learn how to look at a situation from many different perspectives, and how to search for more than one answer to a particular question. He states “a case is not merely a well written anecdote; cases extend opportunities for reflection precisely because they take the learner beyond the limits of individual experience and permit opportunities for reflecting on the experiences of others” (p.36).

Taking a lead from Shulman (1988) and Shulman (1992), this research uses vignettes in the interviews to cause the SI and the CT to reflect-in-action. Many of the vignettes described are drawn from the work of Shulman (1992) and Shulman & Colbert

(1987, 1988). Reflection-on-action is utilized when the SI or CT are asked to review a transcript of the interview and reflect on it.

Chapter Summary

The review of the literature in this chapter has covered intellectual developmental literature, collaboration and reflective thinking in supervision. It is noteworthy that there were only two studies with Hunt's PCM that were completed with cooperating teachers and student interns. The majority of studies in this field have been completed with university supervisors and their interns. The focus of this research is on student interns and cooperating teachers and their intellectual developmental levels. The research asks two questions related to that focus:

- Is there a correlation between the PCM and WOKI?
- Is there a relationship between intellectual development and collaboration?

The next chapter contains a review of the methods used in the research designed to answer those questions for this population of student interns and cooperating teachers. The chapter includes a description of the sample and the population from which it was drawn, the procedures for administering and scoring the PCM and WOKI, statistical analyses that were conducted, the procedure for the interviews, and the procedure for analyzing the interview data.

CHAPTER THREE

METHODS

This chapter includes descriptions of the hypotheses, population and participants, scoring methods, and interview selection process and protocol.

Purposes

This study has two main purposes:

1. To test the hypothesis that there is a correlation between two intellectual developmental measures: the PCM (Hunt, 1971) and the WOKI (Buczynski, 1992).
2. To examine the relationship between intellectual developmental level and collaboration in seven SI-CT supervisory pairs

The hypothesis regarding the correlation between CL scores and the WOKI subscales can be further broken down into more detailed hypotheses as shown in Table

4. The table shows the intersections where there may be a correlation between CL and the subscales on the WOKI.

Table 4: Hypotheses for CL Scores and WOKI Subscales

WOKI Subscales	Conceptual Level
Silence	Negative Correlation
Received Knowledge	Negative Correlation
Subjective Knowledge	Moderate Correlation
Procedural Knowledge	Moderate Correlation
Constructed Knowledge	Strong Correlation

Population

The population for this research were the students engaged in either a one-semester or two-semester teaching internship at a large public university in the Northeastern United States, their cooperating teachers, and their supervisors from the university. This number totaled 240. One cooperating teacher was removed from the population because he had participated in a pilot of some of the study materials, resulting in a population size of 239. See Table 5. The vast majority of the students were in the fifth year of a five year Master of Education program and engaged in a post baccalaureate teaching internship for a full year. One student in the Master of Education program who had been previously certified in a baccalaureate program was engaged in the fifth year teaching internship for only a half year. There were four undergraduate students who were engaged in a teaching internship for a half year only as part of an undergraduate option in teaching. Each of these groups is categorized in the following table according to gender and grade level at which they are working. Note that the 17 university supervisors were responsible for groups of interns and they are not

assigned to a grade level. The portion of this population that agreed to participate in the study is presented in Table 6.

Table 5: Population by Length of Internship, Gender, and Grade Level

Population	Grades 1-5	Grades 6-12	Music
n	n	n	n
Student Interns, 5th Year Master of Education			
Full Year Internship			
Women	84	45	39
Men	20	7	13
Half Year Internship			
Women	1	1	0
Men	0	0	0
Student Teachers, Undergraduate			
Half Year Student Teaching			
Women	2	0	1
Men	2	0	1
Cooperating Teachers			
Women	83	49	34
Men	30	6	22
University Supervisors			
Women	11		
Men	6		
Totals	239	108	110

Table 6: Participants by Length of Internship, Gender, and Grade Level

	Grades 1-5		Grades 6-12	Music
	n	n	n	n
Student Interns, 5th Year Master of Education				
Full Year Internship				
Women	35	20	15	
Men	8	2	6	
Half Year Internship				
Women	0	0	0	
Men	0	0	0	
Student Teachers, Undergraduate				
Half Year Student Teaching				
Women	1	0	0	1
Men	2	0	1	1
Cooperating Teachers				
Women	28	19	9	
Men	11	3	7	1
University Supervisors				
Women	10			
Men	5			
Totals	100	44	38	3

Procedures

A meeting of the student interns, cooperating teachers, and university supervisors was scheduled for August 31, 1995. It was planned to distribute and collect the PCM and WOKI questionnaires at this meeting. Although they were invited, very few

cooperating teachers attended the meeting. The meeting was required for supervisors and student interns. A total of 108 attended the meeting. As people came into the meeting, they approached the desk, gave their name, and were handed a numbered manila envelope. Each envelope contained a consent form, a PCM, and a WOKI, each with the same number as on the envelope. The envelope number was recorded next to their name.

Of the 108 who attended the meeting, 38 responded at the meeting. Twenty completed the questionnaires and 18 declined to participate. The rest of those attending the meeting agreed to complete the questionnaires at home and return them to a designated mailbox on campus.

To increase participation rate, two strategies were used. First, questionnaires were sent to the remaining people who did not attend the meeting and to the 18 who declined to participate at the meeting. Included in this mailing were a letter explaining the research and the importance of their participation and a self-addressed, stamped return envelope. After three weeks, follow-up phone calls were made to individuals who had not responded. The resulting increase in the responses was from 38 to 96. Of the 96 who responded, 73 agreed to participate: 51 women and 22 men.

Second, the researcher contacted each supervisor with a request to meet with their respective supervisory groups. Over the next three weeks the researcher met with seven supervisory groups. The other 10 supervisors spoke with their own groups and distributed extra questionnaires as needed. The response rate increased from 96 to 137.

Overall, the total participation increased from 73 to 100, 74 women and 26 men. The final response rate is 57% of the total population, and the final participation rate is

41.8% of the total population. Of the people who responded, 72.9% agreed to participate.

People who *did not* respond and who received follow-up phone calls gave reasons such as the following for not participating: illness with self or with someone in the family, overwork, no time, and too much involvement with the university already.

Scoring the PCM

The PCMs were scored in two groups. The researcher decided early on in the research to give the instrument to the entire population, even though the number of men in the population was small. When PCMs completed by men were received, they were put aside initially. Consequently, only the women's PCMs were scored in the first group.

First Group

The first group of 51 women were taken as a set for scoring the PCM. The instruments were placed in numerical order and then numbered from 01 to 51. Using a random number table, and starting at column 1 line 1 and moving left to right, fifteen were selected. Copies of those instruments were made and the originals were put back into the group of 51. Of the copies, the first 10 of them were sent to an expert scorer. This was to ensure that the researcher's scoring was consistent with that of the expert. The remaining five were put aside to include in the next scoring session. Then these five were scored again and the scores compared against the original score to ensure consistency.

PCMs were scored according to the scoring manual (Hunt, Butler, Noy, Rosser, 1978). Each stem was scored and a total CL score was obtained by computing the

average of the top three scores. CL scores were then placed into one of three modes. Mode A scores are those which are between 0-1.4, Mode B are those which are between 1.5-1.9, and Mode C are those which are between 2.0-3.0 (Oja, Chamberlain, Moran, Struck, 1993).

The expert scorer and researcher agreed on 9 of 10 total CL scores. There was some variation in scoring on individual stems but it was not significant enough to affect the total CL score. The researcher tended to score higher on some stems. J. Mortensen, the expert scorer, stated that “It was by far the highest set of scores I have ever done” (personal communication, October 27, 1995).

Second Group

The second group of 49 PCMs (23 women and 26 men), plus the five copies from the previous group, were arranged in numerical order, and scored.

A comparison of the scores on the group of five from the first and second scoring session shows some variation in scores on individual stems but it was not significant enough to affect the total CL score. This variation can be attributed to the researcher’s learning as a result of the expert scoring of 10 PCMs in the first group. In the second scoring session, the researcher was aware that she had scored higher than the expert on some stems in the first scoring session, and she used this information accordingly.

Scoring the WOKI

The WOKI is a 49-item questionnaire on which the respondent selects an answer from a four-point Likert Scale as follows:

Strongly Disagree	Somewhat Disagree	Somewhat Agree	Strongly Agree
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Scoring the items is done according to the following points:

- Strongly Disagree - 1 point
- Somewhat Disagree - 2 points
- Somewhat Agree - 3 points
- Strongly Agree - 4 points

Items on the WOKI are grouped by epistemological position as discussed in *Women's Ways of Knowing* (Belenky, Clinchy, Goldberger, & Tarule (1986)). The following table shows the epistemological positions, item numbers related to the position, the total number of items for each epistemological position, and maximum possible score.

Table 7: Ways of Knowing Inventory Scoring

Epistemological Position	Item Numbers	Total Number of Items	Maximum Possible Score
Silence	1, 2, 3, 4, 12, 19, 20, 30	8	32
Received Knowledge	14, 15, 16, 17, 31, 44, 45, 46, 48, 49	10	40
Subjective Knowledge	10, 13, 33, 36, 40, 41, 42	7	28
Procedural Knowledge	5, 6, 8, 9, 11, 18, 21, 22, 24, 27, 28, 29, 32, 37, 39	15	60
Constructed Knowledge	7, 23, 25, 26, 34, 35, 43	7	28
Total Items		47	

Item numbers 38 and 47 are omitted from the scoring based on previous research (Buczynski, 1993) conducted by the author of the WOKI. Those items were found to be independent from the epistemological positions and were therefore omitted from further scoring. The researcher collated the scores for each item on the WOKI and derived one score for each of the epistemological positions for each individual.

Statistical Analysis on PCM and WOKI

After the instruments were scored, the group of 74 women was split into the following groups for the statistical analysis. Men were not included in the statistical

analysis because the purpose of the WOKI was to measure the intellectual development of women and it was decided to keep the focus of the correlations on women only.

- Student interns
- Cooperating teachers
- University supervisors
- Elementary student interns and cooperating teachers
- Secondary student interns and cooperating teachers
- All women whose CL scores were in the low range (0-1.4)
- All women who whose CL scores were in the moderate range (1.4 - 1.9)
- All women whose CL scores were in the high range (2.0-3.0)
- All women

A Pearson *r*-correlation was calculated between CL scores and the subscales on the WOKI for each of these groups. Results for the group of all women are reported. The hypotheses that were tested are shown in Table 8.

Table 8: Hypotheses for CL Scores and WOKI Subscales

WOKI Subscales	Conceptual Level
Silence	Negative Correlation
Received Knowledge	Negative Correlation
Subjective Knowledge	Moderate Correlation
Procedural Knowledge	Moderate Correlation
Constructed Knowledge	Strong Correlation

Once the Pearson- r was calculated, a p -value and the r^2 value was determined for each of the groups. An interpretation of the statistics was completed using the following guidelines (Wolf, 1986):

- A weak correlation is .10
- A moderate correlation is .30
- A strong correlation is .50

Interviews

The purpose of the interviews was twofold:

- To confirm the data received on the WOKI and PCM for seven SI-CT pairs
- To examine the relationship between intellectual level and collaboration for seven SI-CT pairs

It was decided to use vignettes as the framework for the interviews. The vignettes were centered on events that may occur in a classroom. The issues in the vignettes are related to grading, discipline, problem-solving, and conflict resolution. These issues are important for the SI to learn about in the course of the internship (University Pamphlet, 1995). King & Kitchener (1994) use what they call “ill-structured” problems in their reflective judgment interview. While the vignettes in this research are not “ill-structured” problems by King & Kitchener’s definition, they require the interviewee to think through the vignette, decide how they would deal with the question that is posed, and then articulate it. Lee Shulman (1988) believes that cases “extend opportunities for reflection” (p.36). The vignettes in this research were adapted from cases used by Shulman (1992) and Shulman & Colbert (1987 & 1988). Follow up

questions from the researcher dealt with issues of collaboration, reflection-in-action, reflection-on-action, and reflection-through-recollection.

Interview Pilot Test

The researcher interviewed one cooperating teacher and one student intern from the 1994-1995 school year as a pilot test. The purpose was to pilot the interview questions, protocol, amount of time required for the interview, and the researcher's style. In the first pilot interview, the researcher had the SI read the questions to herself and then answer them. When the SI was finished reading the question, she often needed to re-read the question. When I asked her at the end of the interview if she would prefer that I read the questions to her, her response was yes. Based on this feedback, the researcher read the questions to the CT while the CT followed along, during that interview. The CT indicated at the end of the interview that this was good method: he was able to listen and also see the question. Based on this test, the researcher decided to read each vignette and question to the interviewee as she or he followed along.

SI-CT Interview Volunteer Pairs

Of the total number of those who completed the questionnaires, 51 people agreed to be interviewed. Of the 51, 11 were supervisors and eliminated. Of the 40 remaining people, seven of them were pairs: five elementary and two secondary. In order to increase participation of secondary school pairs, the researcher called a CT who had very enthusiastically volunteered to participate and asked him if he would encourage his SI to participate also. He did so and that increased the number of pairs to eight. The researcher called a CT at one of the secondary schools to set up the first interview, and the CT encouraged the researcher to call another CT at her school who "needed help."

The researcher subsequently called the other CT who indicated she would really like to participate and who encouraged the researcher to call her SI, who had completed the questionnaire, but had not agreed to be interviewed. The researcher contacted the SI and encouraged her to participate, and the SI agreed to do so. At that point, there were nine SI-CT pairs, five elementary and four secondary. The researcher decided not to “pursue” any more. Of the nine pairs, seven CT-SI pairs were selected to be interviewed. One pair was eliminated because the SI was an undergraduate who was student teaching for only a half year. A second pair was eliminated because the SI was already certified in another area, and was only engaged in the internship for a half-year.

Of the final seven pairs, four of the pairs are teaching in elementary level and three are teaching at the secondary level. There is one male cooperating teacher, all others SIs and CTs are women.

The scores of the pairs on the intellectual developmental measures are shown in Table 9 and Table 10.

Table 9: PCM and WOKI Scores for SI-CT Pairs - Grades 1-5

Pair	Role	PCM	WOKI				
Number							
		CL	Silence	Received Knowledge	Subjective Knowledge	Procedural Knowledge	Constructed Knowledge
One							
	SI	2.5	16	19	17	30	27
	CT	2.3	11	11	13	31	27
Two							
	SI	2.3	18	17	18	39	21
	CT	2.7	20	16	21	29	28
Four							
	SI	2.3	13	14	19	31	24
	CT	3	11	22	22	29	24
Five							
	SI	2.3	16	20	19	34	23
	CT	2.7	15	16	14	31	28

Table 10: PCM and WOKI Scores for SI-CT Pairs - Grades 6-12

Pair	Role	PCM	WOKI				
Number							
		CL	Silence	Received	Subjective	Procedural	Constructed
				Knowledge	Knowledge	Knowledge	Knowledge
Six							
	SI	2.3	13	17	11	26	25
	CT	2	11	13	8	28	24
Seven							
	SI	2.1	16	19	17	35	24
	CT	1.2	14	26	20	37	28
Eight							
	SI	2	13	21	21	36	28
	CT	1.5	14	15	18	34	25

If the two members of a pair have a CL score within the same range (0-1.4, or 1.5-1.9, or 2.0-3.0) on the PCM, then it is likely that they will exhibit characteristics that are similar to those of Stage A, Stage B, or Stage C teachers (Sprinthall, Sprinthall, & Oja, 1994, p. 390). (See descriptions of Stage A, Stage B, and Stage C in Chapter Five section on Analysis of PCM Scores.) If two members of a pair have a score on a WOKI subscale that is greater than or equal to 50% of the total score, and is within 15% of each other, then it is likely that they will exhibit behaviors that are characteristic of the particular subscale.

The analysis of the WOKI scores for an individual is something that has been attempted but not documented [T. Ritter (personal communication March 19, 1996).] In the original study Buczynski (1993) administered the WOKI to 349 college students. Graduate students interviewed some of the college students to confirm or contradict the individual's WOKI scores. This effort was abandoned by Buczynski for personal reasons [P. Buczynski (personal communication, October 10, 1995).] The researcher spoke with Ritter about interpretation of the WOKI scores. He stated that the researchers had begun in 1992 to interpret the WOKI subscale scores in the same way that the current research is suggesting. That is, the original researchers were looking at a total profile of the individual and making tentative conclusions about the type of knower an individual was. So, if an individual scored in the 80% range on the received subscale, and in the 50% range on the rest of the subscales, then it may be that the individual is predominantly a received knower. When the original researchers began to interview, they were seeing trends that supported the scores on the WOKI subscales.

The current research analyzes the WOKI subscales in a similar fashion. Each of the scores on the WOKI subscales is converted to a percentage to provide a common basis for comparison.

Interview Protocol

Interviews with these seven volunteer SI-CT pairs were conducted individually, once in November, 1995 and once in January, 1996 (See Appendix A for interview questions). All interviews were audiotaped. Each interview was scheduled for one hour and was structured around a series of questions about situations that could occur in the classroom. The researcher handed a copy of the question to the participant and read the

question aloud. The researcher then asked the participant to answer the question. The researcher followed up at times with further questions as the participant raised issues related to collaboration, “read and flex” and reflection-in-action, reflection-on-action, reflection-through-recollection, and communication. All audiotapes were transcribed. Transcriptions, which averaged 18 pages in length, were sent to each SI and CT one week prior to the second interview for their review.

The protocol for the second interview was the same. At the outset of the second interview, the researcher asked the following question: “Now that you have read the transcription of the first interview, is there anything you would like to change about your answers?” Once that question was answered, the CT or SI was asked to answer four questions about situations that could occur in a classroom, plus one question as follows: “Has there been any point during this internship that you would have liked to have quit as [intern or cooperating teacher]?” The researcher posed this question because this question causes the SI or CT to discuss how the internship is proceeding. If the answer to this question is “no”, then the follow-up question is “what are the characteristics of your internship that make it successful. If the answer to this question is “yes”, then the SI or CT can discuss the characteristics of the internship that have caused it to be in turmoil.

Interview Analysis

The interview analysis is split into two main sections, collaborative pairs and non-collaborative pairs. In each section there is a discussion of the characteristics of collaborative pairs and non-collaborative pairs, then a pair-by-pair discussion focused on:

- The CL and WOKI subscale scores
 - A comparison between SI and CT scores
 - A confirmation or contradiction of the scores in the interviews
- Answers for CT and SI on the vignettes

Chapter Summary

This chapter has explained the method, sample, and procedures for the research study. Two instruments were used in the study, the PCM and the WOKI. The PCM was scored by the researcher and a random sample of PCMs were scored by an expert. The WOKI scores were tabulated and computed by the researcher. A subset of the sample of 74 women were selected for interviews based on their interest in further participation. Two individual interviews were conducted with seven SI-CT pairs.

Chapter four contains a discussion of the statistical tests that were run on the data and the analysis of those tests. Chapter five contains an analysis and discussion of the interview data.

CHAPTER FOUR

DATA ANALYSIS AND DISCUSSION OF RESULTS

This chapter includes the purposes of this research, the hypotheses, and a statistical analysis of the data from the two intellectual developmental measures. This chapter leads into Chapter 5 which presents a qualitative analysis of the interview data.

Purposes

This study has two major purposes:

1. To test the hypothesis that there is a correlation between two intellectual development measures: the PCM (Hunt, 1971) and the WOKI (Buczynski, 1992).
2. To examine the relationship between intellectual development and collaboration.

The hypothesis regarding the correlation between the conceptual level (CL) and the subscales on the WOKI can be further broken down into more detailed hypotheses as shown in Table 11. The table shows the intersections where there may be a correlation between CL and the subscales on the WOKI.

Table 11: Hypotheses for Conceptual Level Scores and WOKI Subscales

WOKI Subscales	Conceptual Level
Silence	Negative Correlation
Received Knowledge	Negative Correlation
Subjective Knowledge	Moderate Correlation
Procedural Knowledge	Moderate Correlation
Constructed Knowledge	Strong Correlation

Sample

The sample totaled 74 women. Of this number, 36 were student interns, 28 were cooperating teachers, and 10 were university supervisors. From this group, seven pairs of student interns and cooperating teachers were selected for interviews, four pairs from the elementary level (1-5), and three pairs from the secondary level (8-12). [There is one male CT who agreed to be interviewed.]

Data Analysis

The data analysis is done in two main sections. The first main section contains the discussion related to the hypothesis that there is a correlation between CL and the WOKI subscales. It is subdivided into a discussion of the CL scores and summary information on the data, a discussion of WOKI subscale scores and summary information on the data, and a summary of the results of the statistical analysis that was performed on the CL scores and WOKI. Next, Chapter 5 contains the analysis and discussion related to the second purpose of the research which is to examine the relationship between intellectual development and collaboration. Chapter 5 is subdivided into a general

discussion of the group of CTs, the group of SIs, and then each pair is discussed in more detail.

Is There a Correlation between CL and the WOKI Subscales?

In this section, there is a discussion of the results of the inquiry related to the first hypothesis. Table 12 shows the descriptive data for the CL scores and WOKI subscales for the entire sample.

Table 12: Descriptive Data for CL and WOKI Subscale Scores

Variable	N	Mean	Standard Deviation	Range of Scores	Maximum Possible Score
CL	74	2.20	.51	1-3	3
Silence	74	15.58	3.47	9-28	32
Received Knowledge	74	17.52	4.08	10-31	40
Subjective Knowledge	74	15.58	3.61	7-24	28
Procedural Knowledge	74	32.21	4.34	23-42	60
Constructed Knowledge	74	24.83	2.32	21-28	28

Table 13 shows the descriptive data for the CL scores and WOKI subscales for the entire sample.

Table 13: Descriptive Data for CL and WOKI Subscale Scores by Role

Variable	N	Mean	Standard Deviation	Range of Scores	Maximum Possible Score
Student Interns					
CL	36	2.04	.38	1.2-2.8	3
Silence	36	16.03	3.73	9-28	32
Received Knowledge	36	18.25	3.96	12-31	40
Subjective Knowledge	36	16.50	3.75	8-24	28
Procedural Knowledge	36	32.88	4.92	23-42	60
Constructed Knowledge	36	24.70	2.50	21-28	28
Cooperating Teachers					
CL	28	2.28	.57	1-3	3
Silence	28	15.46	3.36	10-26	32
Received Knowledge	28	17.42	3.89	11-26	40
Subjective Knowledge	28	14.93	3.53	7-22	28
Procedural Knowledge	28	31.50	3.52	25-38	60
Constructed Knowledge	28	24.46	2.24	21-28	28
Supervisors					
CL	10	2.59	.46	1.8-3.0	3
Silence	10	14.30	2.67	10-19	32
Received Knowledge	10	15.20	4.52	10-24	40
Subjective Knowledge	10	14.10	2.60	9-18	28
Procedural Knowledge	10	31.80	4.24	24-38	60
Constructed Knowledge	10	26.40	1.07	25-28	28

CL Data and Discussion.

Hunt's (1971) PCM was given to all the participants to determine their conceptual level (CL) score. This score is an indicator of the level of intellectual development of the individual as well as an indicator of the preferred learning style of the individual. Scores on Hunt's PCM can be classified into three categories: low CL scores between 0-1.4, moderate CL scores between 1.5-1.9, and high CL scores between 2.0 and 3.0. Of the total sample, five scored in the low CL range, 13 in moderate CL range, and 56 in the high CL range. These scores are higher than what is normally seen for a sample of student teachers. But these results confirm findings of Oja, Chamberlain, Moran, & Struck (1993) for a similar population of full-year teaching interns in a five-year MAT, MEd. Program.

WOKI data and discussion.

The WOKI was given to all participants to determine their intellectual development level. Each individual receives a score on each of five WOKI subscales as noted in Table 12. Notice that this population had a mean score of 24.83 out of a possible 28 on the constructed knowledge subscale. This indicates that this group's responses fit the constructed knowledge epistemological position as defined by Belenky, Clinchy, Goldberger, & Tarule (1986) who wrote that the women in their interviews who were constructed knowers described knowing as "an effort to reclaim the self by attempting to *integrate* knowledge they had learned from others. They [constructed knowers] told of weaving together the strands of rational and emotive thought and of integrating objective and subjective knowing" (p. 134). This position can be further

characterized by one who works together with others, who listens and shares, and who collaborates to arrive at knowledge. A discussion of Belenky et al. epistemological positions is in Chapter 2.

CL and WOKI Pearson *r* correlations and p-values.

The intercorrelations among the CL scores and WOKI subscales are shown in Table 14.

Table 14: Intercorrelations Among CL and WOKI Subscales

	CL	Silence	Received Knowledge	Subjective Knowledge	Procedural Knowledge	Constructed Knowledge
CL	—	-.09	-.28*	-.17	-.30**	.06
Silence			.47**	.15	.25*	-.14
Received-Knowledge				.29*	.28*	-.15
Subjective-Knowledge					.45**	.18
Procedural-Knowledge						.07
Constructed-Knowledge						
*p < .05		**p < .01				

For the purposes of this research, a low correlation is .10 or less, a moderate correlation is greater than .10 and less than or equal to .30, a moderate to strong correlation is greater than .30 and less than or equal to .59. A strong correlation is one which is greater than .60 (Wolf, 1986).

There is a moderately low negative correlation between CL and received knowledge, indicating that as the CL score increases the received knowledge score decreases. The r^2 value for the CL-Received Knowledge correlation is .05, thus the CL accounts for 5% of the variance of the scores on the received knowledge subscale for the group of all women. The other correlation found was a moderate negative correlation between CL score and the procedural knowledge subscale. The r^2 value for the CL-Procedural Knowledge correlation is .11, thus the CL accounts for 11% of the variance of the scores on the procedural knowledge subscale for the group of all women. No other correlations were found in this sample of 74 women for the CL and the five subscales on the WOKI instrument.

It was expected, however, that there would be strong positive correlations between CL score and the procedural knowledge and constructed knowledge subscales. The low and negative correlations indicate that there is little relationship between the PCM and the received knowledge and procedural knowledge subscales. The PCM is constructed such that the respondent is directed to respond with answers on four of the stems with statements that discuss what *action* they would take if a certain event occurred (When someone disagrees with me..., When I am not sure..., When I am told what to do..., When I am criticized...). Only one question asks the respondent to discuss how she thinks about something (What I think about rules...). The PCM is a semi-projective measure that allows the respondent to answer the question as she wishes, and in her own words, using at least three sentences per stem. The WOKI, in contrast, is a forced choice 4-point Likert scale that requires the respondent to recognize and then

agree or disagree with a statement describing how she might *act* in some circumstances.

For example, one item on the WOKI:

When I have an idea about something, and it differs from the way another person is thinking about it, I'll usually try to look at it from that person's point of view, see how they could say that, why they think that they're right and why it makes sense.

This WOKI item corresponds closely to a response on a PCM stem of "When someone disagrees with me...", and it would rate a score above 2.0 according to the scoring rules for Hunt's PCM (see Hunt et al., 1978, pp. 21-25), indicating a high CL level for that response.

The WOKI also asks the respondent how she *feels* and *thinks* about certain things and situations, which is different from the PCM. For example if a respondent responded with "Strongly agree" on the following WOKI item, she would be classified as a constructed knower for that response:

It is important for me to understand why people think in a certain way.

On the PCM, however, this response would be scored at high CL, 2.0 or above, only if it also included elements such as compromise, context, and resolution (See Hunt et al., 1978, pp. 12, 14, 34).

I believe that the lack of a positive correlation at least in part can be attributed to whether the respondent is asked to project her own answer or recognize and rate a given answer. The weak negative correlation between CL and received knowledge is not surprising. As one moves to a position of constructed knowledge then it is reasonable to assume that one will not rely on authorities for knowledge. I wonder if the moderate negative correlation with procedural knowledge is because the sample was all women

and because connected knowing tends to be a feminine characteristic (Kegan, 1994). The PCM does not measure differences between connected and separate knowing and neither does the WOKI. Women's Ways divides procedural knowledge into separate and connected; the WOKI does not divide procedural knowledge subscale into separate and connected. An individual can score highly on the PCM by expressing a willingness to listen to others, to compromise, to consider the context of the issue. It may be, however, that the women in this sample responded to the PCM as connected procedural knowers in WOKI terms. Belenky et al. (1986) and Gilligan (1971) stated that women tend to view issues in relation and in connection to issues, people, events. Belenky et al., in describing women's development, stated that "for women, confirmation and community are prerequisites rather than consequences of development" (p. 194). And Hunt et al. (1978) defined CL in terms of

(1) increasing conceptual complexity as indicated by discrimination, differentiation, and integration and (2) increasing interpersonal maturity as indicated by self definition and self-other relation (p. 3)

In a recent study Orr and Luszcz (1994) interviewed 30 women and 30 men (both undergraduate and graduate students) to examine the degree to which they used the five ways of knowing identified by Belenky et al. (1986). They "anticipated that procedural knowing would prevail in some cases accompanied by constructed knowing" and they expected "a convergence between constructed knowing and relativistic thinking" (p. 227). They interviewed each participant individually for 40 to 90 minutes. They presented the participants with two "everyday" problems to solve. These were scored for relativistic thinking according to Sinnott's (1991) criteria, as cited in Orr and Luszcz. Then the interviewer asked questions in a structured fashion that were designed

to elicit ways of knowing. Statements that exhibited ways of knowing were coded and given a score of 1 on each way of knowing. If a way of knowing statement was a restatement or clarification of an earlier statement, it was coded with the original statement and not given a separate score. Subjects also responded to two subscales from the Revised Relationship Self Inventory (RRSI) (Strommen, Reinhart, Pearson, Donelson, Barnes, Blank, Cebollero, Cornwell, 1987 as cited in Orr & Luszcz) and the Bem Sex Role Inventory (BSRI) (Bem, 1974, 1977 as cited in Orr & Luszcz). Ways of knowing questions were modified from the original Women's Ways of Knowing interviews. Orr & Luszcz (1994) found that men used significantly more "simple" procedural knowing than women, but they found no difference in connected or separate procedural knowing. Constructed knowing and use of relativistic operations were positively correlated while procedural knowledge and relativistic operations were negatively correlated. The current research also found a moderate negative correlation between CL and procedural knowledge. In their intercorrelations, they found "significant inverse correlations" of received knowledge, subjective knowledge, and procedural knowledge with constructed knowledge, which led them to the notion that "less sophisticated ways of knowing may be displaced by constructed knowledge" (p. 230). In contrast, the current research found significant positive correlations between the following subscales on the WOKI; silence and received knowledge, silence and procedural knowledge, received knowledge and subjective knowledge, received knowledge and procedural knowledge, and subjective knowledge and procedural knowledge.

Another possibility for the low and negative correlations could simply be that the instruments are measuring two different things or that the relationship between the two instruments is very weak. Hunt (1971) sought to determine the intellectual development of an individual based on the premise that $B=f(P,E)$, where behavior is a function of the interaction of a person and the environment. The original conceptual systems research (Harvey, Hunt, & Schroder, 1961) indicates no gender differences. Belenky et al. (1986) sought to ascertain if women's intellectual development was different from men's. They began with the premise that there were differences, they used Perry's (1971) work as the model for the investigation, and Gilligan's (1971) work as a rationale for listening to women's voices. The latter approach is very different from that of Hunt. Then, Buczynski (1993) took statements from the Women's Ways interviews and used them as questions on the WOKI. The result may be a level of abstraction from the original intent of Women's Ways that makes a correlation between the PCM and the WOKI problematic. Perhaps the answer would be, for future research, to construct a paper-and-pencil measure based on Women's Ways that is similar to that of Hunt.

Intercorrelations Among WOKI Subscales

To further study the results, the intercorrelations among the subscales on the WOKI were examined and a p-value calculated (See Table 14). These findings are different from what Buczynski (1993) found on her initial sample of 348 college students. The results of the intercorrelations she calculated are shown in Table 15.

Table 15: WOKI Intercorrelations - Buczynski (1993) Results

Subscales	Received Knowledge	Subjective Knowledge	Procedural Knowledge	Constructed Knowledge
Silence	.16	.28	.23	-.16
Received Knowledge	—	.09	.11	-.06
Subjective Knowledge	—	—	.09	-.03
Procedural Knowledge	—	—	—	-.24
Constructed Knowledge	—	—	—	—

Note that she did not report p-values for the intercorrelations, but she stated that the “five factors proved to be independent as illustrated by the low factor intercorrelations” (p. 197). Buczynski also calculated Cronbach’s alpha internal reliability coefficients for each subscale. They were “.69 for Silence, .69 for Subjective, .72 for Received, .74 for constructed, and .80 for procedural” (p. 199).

A possible explanation for the differences between the intercorrelations of the WOKI subscales on the current research and Buczynski’s (1993) research is that her sample was primarily college students. The sample for the current research comprised student interns who were graduate students, and university supervisors and cooperating teachers who have many years of teaching experience. As adults develop, they use learning strategies that suit the situation and it may be that this is what we are seeing in

these results. Hunt et al. (1978, p. 3) discussed this as “discrimination, differentiation and integration”, as well as “increasing interpersonal maturity as indicated by self-definition and self-other relation” while Belenky et al. (1986) discussed this as “weaving together the strands of rational and emotive thought and of integrating objective and subjective knowing. Rather than extricating the self in the acquisition of knowledge, these women used themselves in rising to a new way of thinking” (pp. 135-135). As mentioned earlier, Orr and Luszcz (1994) thought that procedural knowledge and constructed knowledge would be strongly correlated but their study found an inverse correlation; however, they did not use the WOKI in their research.

Stepwise Regression Analysis

Since intercorrelations were found between the subscales on the WOKI, and since there were two negative correlations were found between CL scores and WOKI subscales, it was decided to run a stepwise regression analysis. The purpose of the analysis was to attempt to determine the degree to which the WOKI subscales could predict the CL score. Using two qualitative variables to indicate role, plus each of the WOKI subscales, the stepwise regression was completed. The two qualitative variables to indicate role were Teacher and Intern. In combination, and by assigning a value of 0 or 1 to each of them, the Teacher and Intern variables indicated whether or not a particular set of data belonged to a cooperating teacher, a student intern, or a supervisor. In Table 16, the order in which the variables were entered and the results of the stepwise regression are shown.

Table 16: Stepwise Regression Results

Step	Entered	R ²	Probability
1	Procedural Knowledge	.1138	.0064
2	Received Knowledge	.0501	.0605
3	Teacher	.0348	.1119
4	Silence	.0226	.1956
5	Subjective Knowledge	.0081	.4381

No other variable (constructed knowledge or intern) met the .50 significance level for entry into the model. The results of the stepwise regression show that procedural knowledge is a significant but low to moderate predictor of CL score. The moderate negative correlation between CL and procedural knowledge (see Table 14) indicates that as CL increases one could predict that procedural knowledge would decrease in this sample of women student interns, cooperating teachers, and university supervisors.

Chapter Summary

This chapter contained a discussion of the statistical analysis that was performed to test the hypothesis that there is a correlation between CL and the WOKI. The results showed two negative correlations between the CL and the WOKI subscales. A moderately low negative correlation was found between CL and the received knowledge subscale and a moderate negative correlation was found between CL and procedural knowledge subscale. This might be expected because as an individual increases CL or

becomes a constructed knower, they would tend to rely less on authorities for answers or direction. Procedural knowers tend to analyze and evaluate the facts, and may do so in connection with others or in a separate way, whereas a high CL individual is a person who:

Considers and weighs alternatives, then decides upon the best possible solution to a particular problem. In doing so he shows concern for his own and other's ideas and feelings, and about the possible consequences of his decision. Where possible, he seeks a compromise which is suitable to all concerned. But he is secure in his independence and is aware of himself, of his relationship with others and how they view him. He will not compromise his values, principles or beliefs to please others or to conform. By the same token, he will accept full responsibility for the consequences of his decision (Hunt et al., 1978, pp. 5-6).

The intercorrelations between the WOKI subscale were not expected because Buczynski (1993) had not found any in her study. This difference may be attributed to the difference in samples. Buczynski's sample was 95% college women and 5% graduate students. There were only three undergraduates in the sample for this study. Buczynski did not report what subscales her sample scored the highest on, so it is difficult to speculate about the cause. The stepwise regression analysis showed that procedural knowledge was a low to moderate predictor of CL score.

In the next chapter, there is an analysis of the interviews with seven SI-CT pairs. Included are groupings of the pairs who do and do not collaborate, their characteristics, plus a description of the relationship between intellectual development and collaboration.

CHAPTER FIVE

ANALYSIS OF THE INTERVIEWS

This chapter addresses the results of the research concerning the relationship between intellectual development and collaboration in the student intern-cooperating teacher pairs. This relationship was examined using the interview method. Interviews were conducted with seven student interns (SI) and seven cooperating teachers (CT) who were paired with each other. All of the SIs are women, six of the CTs are women, and one CT is a man. Two interviews were conducted with each individual, one in early November, 1995 and one in late January, 1996.

The purpose of the interviews was twofold:

1. To confirm or contradict the results of the PCM and WOKI for the individuals
2. To examine the relationship between intellectual development and collaboration in this group of student interns and cooperating teachers

Vignettes were used as the framework for the interviews. The vignettes were centered on events that may occur in a classroom. The issues in the vignettes were related to grading, discipline, problem-solving (when a lesson does not go well), and conflict resolution (within the SI-CT pair).

The chapter continues by defining collaboration, discussing the method of analysis for the PCM and WOKI information, reviewing the rationale for the separation of the pairs into collaborative and non-collaborative groups, and then examining the interview data and the PCM and WOKI within the framework of the two groups of

collaborative and non-collaborative pairs. The chapter concludes with a discussion of the findings of the analysis.

What is Collaboration?

Collaboration is a process in which two or more people have a shared goal to work together. During collaboration, individuals share information, power, collective wisdom, leadership, influence, and strengths and weaknesses. They are willing to compromise, to take risks, and they trust and can be trusted. In terms of skills, individuals listen, synthesize, summarize, evaluate, restate, and bring discussion to a close and a conclusion using consensus. In collaboration, decisions are made by consensus, where consensus (Ashley, 1992) is defined as the *opportunity* for each person to participate in the decision making and where each person agrees to test the outcome. Collaboration is seen today as a supervisory method that works in some situations.

According to Glickman, Gordon, & Ross-Gordon (1995), in a supervisory relationship, the supervisor can choose from many styles. Depending on the skill of the supervisor and the developmental level of the supervisee, the supervisor may choose a directive, collaborative, non-directive, or collaborative/non-directive style of supervision. The combination of the collaborative/non-directive style is one that Glickman et al. (1995) advocate when a supervisor works with a group of teachers who are involved in peer supervision (p. 181). If a supervisee is functioning at a low level of development or is in a new learning situation, then the directive approach may be best initially. As the supervisee advances developmentally and becomes acclimated to the situation, then movement to a collaborative, non-directive, or combination of the two may be the best approach. Theis-Sprinthal (1986) took a collaborative approach in a program that she

designed to provide training to teachers who would be mentors to either beginning teachers, preservice teachers, or colleagues. She found that the collaborative approach enhanced the mentor's self-esteem and interest in her job as a teacher, and provided an opportunity for growth for the classroom teacher. All of these factors enhanced the success of the mentor training program, which in turn prompted Theis-Sprinthall to continue her work.

Determining the Pairs that Collaborate.

Using the definition of collaboration as the basis, the researcher formulated some questions to guide her reading of the interviews.

- Do they [SI-CT] talk about their teaching (after class, end of day, beginning of day) and how often?
- Are they [SI-CT] honest with each other? (does one know that the other would like to leave the internship)
- Does the CT work with the SI or does the CT "allow" the SI to be in her classroom?
- Do they [SI-CT] listen to each other?
- Have they [SI-CT] disagreed? Have they [SI-CT] compromised?
- Do they [SI-CT] share their knowledge with each other?
- Do they [SI-CT] take risks?

Is There a Relationship between Intellectual Development and Collaboration?

In this section, there is a discussion of the results of the research concerned with the relationship of intellectual development and collaboration. In this section of the analysis, there is a discussion of:

- Basis for the analysis of the WOKI scores
- Basis for the analysis of the PCM scores
- The PCM and WOKI scores
 - A comparison between SI and CT scores
 - A confirmation or contradiction of the scores in the interviews
- Answers for CT and SI on the vignettes which help to understand the intellectual development-collaboration relationship

Analysis of WOKI Scores

The analysis of the WOKI scores for an individual is something that has been attempted but not documented. In the original study, Buczynski (1993) administered the WOKI to 349 college students. She hired graduate students to interview some of the college students to confirm or contradict the individual's WOKI scores. P. Buczynski (personal communication, October 10, 1995) abandoned this research for personal reasons. T. Ritter (personal communication, March 14, 1996) worked with Buczynski during this initial study. He stated that Buczynski and the graduate students she hired had begun in 1993 to interpret the WOKI subscale scores in the same way that this research is suggesting. That is, according to Ritter, Buczynski was looking at a total profile of the individual and making tentative conclusions about the type of knower an individual was. For example, they had begun to theorize that if an individual scored in

the 80% range on the received subscale, and in the 50% range on the rest of the subscales, then it may be that the individual is predominantly a received knower. At the same time, they had begun to see that the scores for individuals on the WOKI subscales were confirmed in interviews with the individuals. (T. Ritter, personal communication, March 19, 1996). However the research was abandoned so no conclusive results were made. Buczynski's (1993) test for intercorrelations among the subscales on the WOKI showed that "the five factors proved to be independent as indicated by the low factor intercorrelations..." (p.198).

The current research furthers this method of analysis of the WOKI subscales. Each of the scores on the WOKI subscales is converted to a percentage to provide a common basis for comparison. Scores over 85% are considered to be high. Those scores above 50% on any subscale are considered to be relevant to the discussion. Scores beneath 50% are omitted from the discussion.

Belenky et al. (1986) stated "we describe in this book epistemological perspectives from which women know and view the world. We leave it to future work to determine whether these perspectives have any stagelike qualities" (p. 15). They found in their interviews that the women shifted from one mode of knowing to another, but the "question of why and when...is not well addressed by our data" (p.15). This leaves open the question of whether or not women can exhibit the characteristics of two modes of knowing at the same time. The current research seeks to "make sense" of the instances where this appears to be the case.

Analysis of PCM Scores

The basis for the analysis and interpretation of the PCM scores comes from work done by Sprinthall, Sprinthall, & Oja (1994, p. 390). In their book on educational psychology, they include descriptions of Hunt's conceptual stages from the point of view of "teachers' attitudes toward learning and teaching". The descriptions are as follows:

Stage A: Shows strong evidence of concrete thinking
Sees knowledge as fixed
Employs a singular "tried and true" method
Exhibits compliance as a learner and expects the same from pupils.
Appears low on self direction and initiative; needs detailed instructions.
Doesn't distinguish between theory and facts.
Relies almost exclusively on advance organizers.
Views teaching as "filling the students up with facts."
Stays at Blooms' Levels One and Two regardless of student level.
Enjoys highly structured activities for self and for pupils
Appears very uncomfortable with ambiguous assignments.
Does not question authority.
Follows a curriculum guide as if it were "carved in stone."
Verbalized feelings at a limited level. Has difficulty recognizing feelings in pupils.
Appears reluctant to talk about own inadequacies; blames pupils exclusively.

Stage B: Evidences a growing awareness of difference between concrete versus abstract thinking.

 Separates facts, opinions, and theories about teaching and learning.

 Employs some different teaching models in accord with student differences.

 Displays evidence of teaching for generalization as well as skills.

 Shows some evidence of systematic “matching and mismatching”.

 Exhibits some openness to innovations and can make some appropriate adaptations.

 Shows sensitivity to pupil’s emotional needs.

 Enjoys some level of autonomy; self-directed learning a goal for self and for the pupils.

 Employs Bloom’s Taxonomy, One through Four, when appropriate.

 Produces evaluations that are appropriate to assignments.

Stage C: Understand knowledge as a process of successive approximations.
Shows evidence of originality in adapting innovations to the classroom.
Appears comfortable in applying all appropriate teaching models.
Is most articulate in analyzing one's own teaching in both content and feeling.
Has a high tolerance for ambiguity and frustration; can stay on task in spite of major distractions.
Does not automatically comply with directions – asks examiner's reasons.
Fosters an intensive questioning approach with students.
Can use all six levels of Blooms Taxonomy when appropriate.
Responds appropriately to the emotional needs of all pupils.
Can "match and mismatch" with expert flexibility.
Exhibits careful evaluations based on objective criteria according to level of assignment. (p. 390)

"We Taught the Class Together": Collaborative Pairs

Three SI-CT pairs are engaged in collaborative relationships, one elementary pair (Pair Four) and two at the secondary level (Pair Six and Pair Eight). It appears that they have worked hard to make their relationship mutually beneficial and rewarding and are working on their collaborative skills and toward collaboration, which is a significant accomplishment. Because they are still learning about each other, there may be times when their behaviors are not collaborative, but overall, they have established strong collaborative relationships. These relationships are characterized by their collegial nature, in which each of the partners in the pair brings knowledge and skill to the pair and shares it with their counterpart. The SIs and CTs who are collaborative acknowledge their own strengths and weaknesses. The CT has opened her classroom to the SI and they share the role of teacher. Each person in the pair has an opportunity to

learn and grow, the CT gives the SI room to take risks, and when they disagree, they discuss the disagreement and resolve it.

Sharing: knowledge and skills.

For the CTs and SIs in this group, their answers to the interview questions contain many references to “we,” as in “we taught this class together,” or “we talk all the time.” There are many illustrations in the interviews. For example, CT-4 chose her intern for what the intern could bring to the classroom. CT-4 said:

So I knew that we could complement each other too. I mean she had a strength in reading and I had a strength in math and we both wanted that from each other so she was there to give me something as well as get something from...and I look back on past interns that knew what they wanted, and it came back and pressured me to work in that classroom...they have to leave something of them there, in the classroom. Not physically but there has to be a part of them that I’ve appreciated so much that I’m never going to let go, so it’s [the way I teach today] kind of a collection of all the interns I’ve had in the past...

CT-8:

...other teachers who didn’t have interns would sort of say “In my shadow,” and [SI] would say... sorry I’m following you everywhere. It didn’t bother me. I’ve enjoyed it, and I enjoy talking with [SI] about what’s going on in class...so we work problems out together [to do with students] and we meet with kids together and deal with those issues...we all ought to share classes.

SI-8 echoes the same sentiment:

I think sometimes we [CT and SI] feel more like professionals that are sharing, because she’s done some things that I have brought, you know, in to the internship, with her class and you know, I’ve gotten a lot of ideas from her.

SI-4 had the following to say regarding the SI-CT relationship:

It’s definitely not teacher-student all the time. I feel in the beginning, I felt well...like we’ve been colleagues all along and sometimes, I take on a student role because I am learning from her but she does the same with me...I can teach some things and I have, and we share a lot of information.

SI-6 echoed similar sentiments about her CT and their relationship:

...just everything I've learned from him. He's an amazing teacher. You know, he likes, he's just really good at teaching me and learning from me too and having this be a real equal working relationship. I got so much from him and hopefully he can learn from me too.

Trusting, taking risks.

In the collaborating pairs, both the CT and SI expressed their desire to learn and grow and their openness to trying new things over the course of the internship as illustrated in the following quotes. The CTs encourage risk-taking in the classroom as a learning opportunity. CT-4:

But I'm always telling them [SIs]...that my classroom is their classroom, too, and it's a place to learn and grow...and that I hope she dares to take risks like that, you know, follow through with something...

In the second interview, SI-6 said:

"I mean I would take any risk with him. He's completely honest and....I feel that he likes and respects me as a teacher and learns from me ... at the same time, which I think boosts my confidence as a teacher.

CT-8:

I don't think she seems fearful of letting people know she makes a mistake sometimes. I don't know if all interns are like that...I think she knows that we all know that she is going make mistakes and that's all right.

Disagreement and resolution.

This group of SIs and CTs also disagree, but they talk it out, they listen, and then come to a decision together on the next course of action. For example, CT-4 talked about how her SI speaks up when something is not working for her in the same way as it is for the CT:

...and then we'll talk over, you know, she's one that ... is willing to say this is not working the same for me as it is for you. Then I have to reflect on what I'm doing or she watches carefully what I'm doing and then tries it again.

In pair six, the SI notes that she and her CT discuss their plans for the next day:

If we're talking about plans for the next day and [we do] not really disagree but [we] offer other ways. He welcomes it. You know...that's a great idea....[he] provide[s] me the [opportunity] to take risks...he is so encouraging and supportive.

Since these pairs are those that collaborate, it is interesting to look at how they completed the paragraph stem in the PCM "when someone does not agree with me...". This single stem does not provide the whole picture of these individuals, and in some cases, the stems cited here are not included in the CL score. This is because the CL score is calculated as the average of the top three scores on the five stems because:

(1) many persons may score a 1 on one or two responses because of temporary lack of interest which might therefore spuriously lower their score since (2) it is difficult, if not impossible to simulate high scores, i.e. under "fake good" instructions, CL scores decrease. Therefore the "pole vault" principle is used: if a person demonstrates a high level of conceptual thinking on a few responses, the person is not required to do so every time (Hunt, Butler, Noy, & Rosser, 1978).

Their answers to this question should show a willingness to talk with others about the topic on which they disagree, to listen to others. Some examples show the ability to compromise while others demonstrate that this ability does not exist consistently.

CT-4 responded:

It's ok—I explain my reasons and probably try to be more persuasive than I should—hold to my opinion on certain subjects especially moral and religious views- but can bend and possibly change on other issues.
[Stem score = 2.5/CL score = 3.0]

SI-4 responded:

I accept their opinions and try to see their point of view. This is not always possible it seems, so I accept their opinion in respect for the individual.
[Stem score = 1.5/CL score = 2.3]

CT-6:

I consider the source. I give little credence to those who warrant little respect. If it is, say my team leader whom I respect deeply, I'd say "let's talk."
[Stem score = 2.0/CL = 2.0]

SI-6:

I like to have a discussion to find out why. If it is an important issue to me, then I try to discuss what the other person's reasons are, and I share my reasons and views. Oftentimes I learn from the other person and vice-versa; sometimes we agree to disagree. [Stem score = 2.5/CL = 2.0]

SI-8:

I try to understand why they don't agree with me. I also try to understand how they feel why we don't agree with each other. If they make me feel like they are right and I am wrong then I get offended. [Stem score = 2.0/CL = 2.0]

CT-8:

When someone does not agree with me I stall for time to think to decide whether or not I should shift my views. Sometimes the end result is that I say "good point." Or maybe I say, "I don't agree." When I'm in too large a group to have a complete dialogue, I mutter, doodle, and grit my teeth.
[Stem score = 1.0/CL = 1.5]

CT-4 can listen and bend, but only in some situations, while SI-4 feels that she can accept a different opinion. Both CT-6 and SI-6 are open to discussion, and CT-6 considers the source of the disagreement, but does not give enough information in the response to know if he would be willing to compromise. However, his account of his actions in the classroom and with SI-6 indicate that he is willing to change and

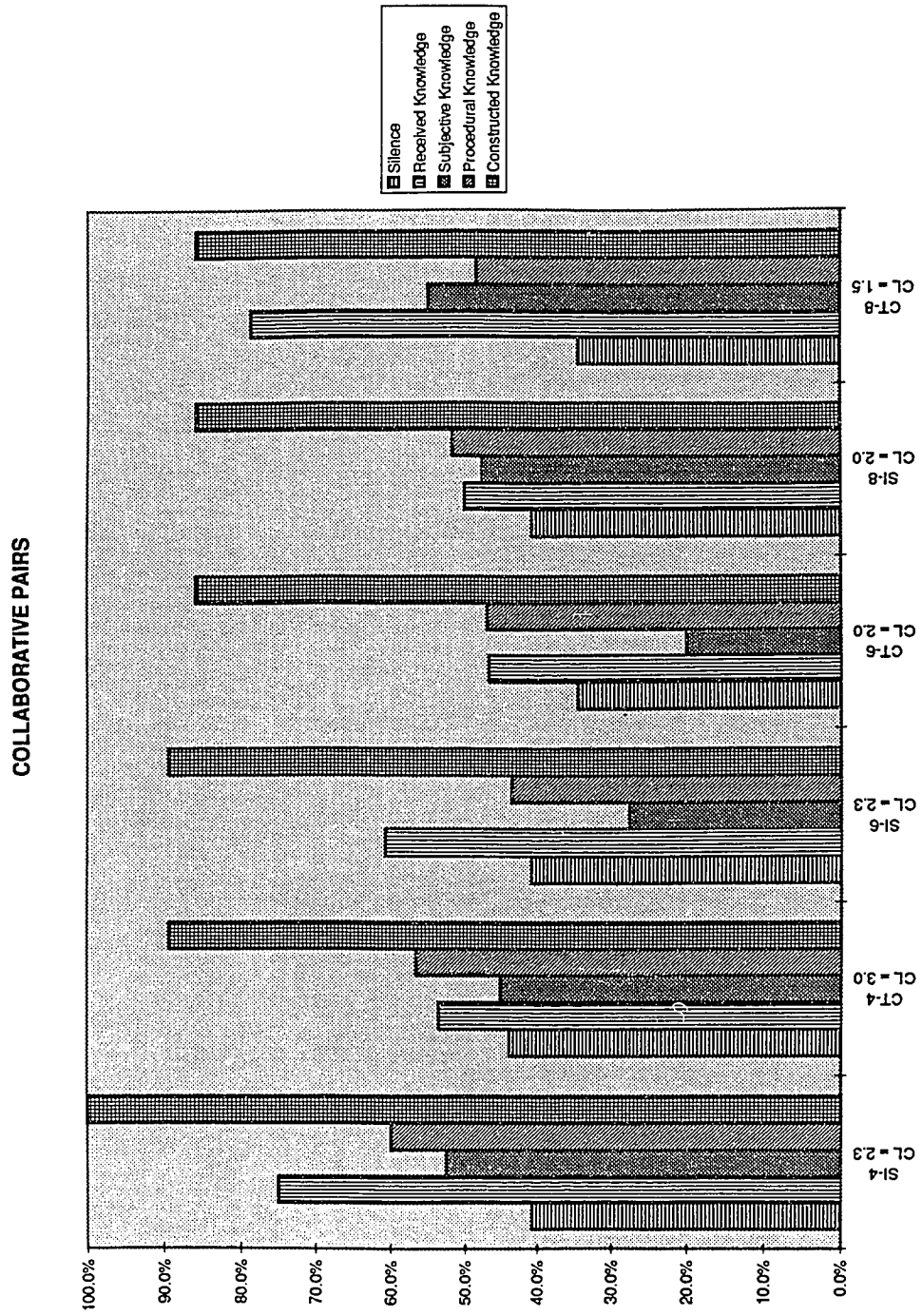
compromise. SI-8 is open to discussion also, and CT-8 is sometimes, but she indicates her reluctance to speak up in groups.

The collaborative pairs demonstrated their willingness to take leadership, to share equally, to listen, to compromise, to learn from each other, and to take risks. As a group, they are not “perfect” collaborators, but they are collaborating most of the time.

Scoring Profiles for the Collaborative Pairs

In, Table 17 you will see the summary of the WOKI profiles for the collaborative pairs.

Table 17: Bar Graph - Collaborative Pairs - WOKI and CL Scores



Notice on the bar graph for the collaborative pairs that all SIs and CTs scored their highest scores on the constructed knowledge subscale, all above 85%. No other scores are over the 85% mark.

Since the highest scores for the collaborative group are consistently on the constructed knowledge subscale, this means that the pairs in this group often responded with “strongly agree” to statements on the WOKI such as:

When I disagree with someone, I often find myself trying to enter that other person’s frame of reference to try and understand why that person thinks a certain way.

When I have an idea about something, and it differs from the way another person is thinking about it, I will usually try to look at it from that person’s point of view, see how they could think that, why they think they’re right. (Buczynski, 1992) For more examples, see Appendix C.

For collaborative pairs 4 and 8, the next highest set of scores overall was on the subjective knowledge subscale with scores between 64% and 79%. This means that they responded often with “strongly agree” with statements on the WOKI such as:

In the past, I have felt that I have never had my own independent identity but instead I have always been busy being someone’s daughter/son, wife/husband, girlfriend/boyfriend, or significant other.

Sometimes I feel like I am on a speeding freight train and I have no control over the events in my life. (Buczynski, 1992)

Two people, CT-4 and CI-8, were over 50% on the received knowledge subscale. This means that they often responded with “strongly agree” and “somewhat agree” with statements on the WOKI such as:

A good student is someone who can absorb and store knowledge received from others.

I find myself looking to others for knowledge.

I think that learning is retaining and returning what authorities tell me.
(Buczynski, 1992)

The other notable scores were for SI-4, SI-8 and CT-8 on the procedural knowledge subscale, where they scored between 50% and 60%. This means that they responded most often with “strongly agree” or “somewhat agree” with statements on the WOKI such as:

I like playing the devil’s advocate. (That is, arguing the opposite of what someone is saying.)

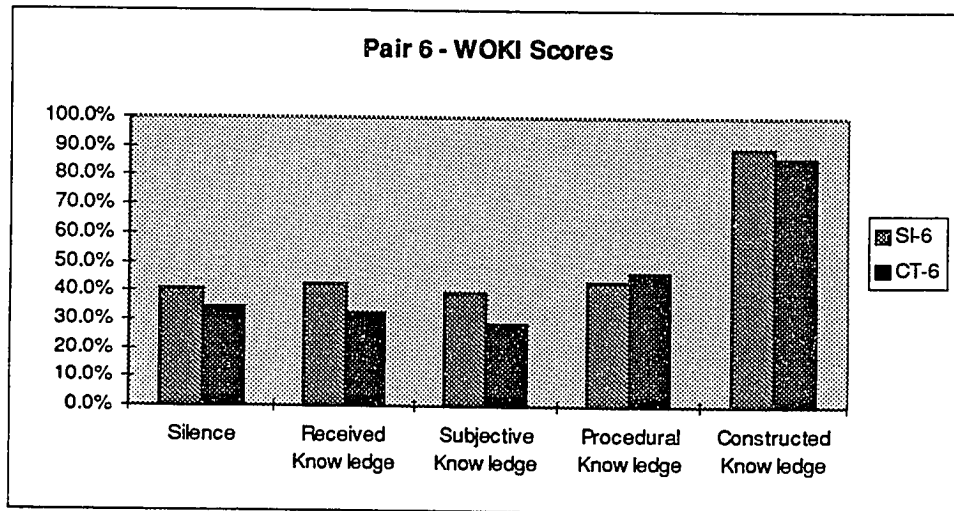
I find that instead of seeing issues in black and white, I see them in shades of gray. (Buczynski, 1992)

In the next section, there is a pair-by-pair discussion of the interviews related to the CL score and scores on the WOKI subscales. The scores of the pair on the two measures is shown in tabular and graphed formats.

Table 18: Pair Six PCM and WOKI Scores

Pair Six	Role	PCM					WOKI		
		CL	Silence	Received Knowledge	Subjective Knowledge	Procedural Knowledge	Constructed Knowledge		
Maximum Possible Score		3.0	32	40	28	60	28		
	SI	2.3	13	17	11	26	25		
	CT	2	11	13	8	28	24		

Table 19: Pair Six - Bar Graph WOKI Scores



CT-6 and SI-6 both scored in the high CL range (see Table 18) and their scores on the constructed knowledge subscale are both above 85% (see Table 19). None of their other scores are over 50% on any WOKI subscale.

The interviews of this pair confirm their CL and WOKI subscale scores. For example, the CT, in response to the question on how he would handle a lesson that was not going well said:

I'd abandon this way of teaching. I would want to have the students in the beginning find out why are people doing this stuff, what's going on here, why is this important, this subject that we're doing, beyond it will get you into college or some, is there any connection and I would like to I'd spend the first day...I'd say coming up with, you know, why is it, is this worthwhile and even have a discussion about writing. It almost sounds like from this thing that these kids kind of just do things because they're told to do and had no, no investment or no engagement, in what's going on. So what I would do is I'd talk about writing. Why do you write? What's the purpose of it? How does it help you organize your thinking, how does it show that you're actually thinking, why do I have you do this?...I would also have students write first and then discuss it. I think it's a problem that we're in so hurried to get through things that we're just rushing through, ah to get things accomplished and I'm not really sure kids learn anything other than, I'll just, I know how to behave to get through this task ...

CT-6 does not hesitate with his answer. This was typical of the SIs and CTs in the interview sample who had high (>2.0) CL scores and high (>85%) constructed knowledge subscale scores. They were able to answer this question in particular with many ideas of how to change the lesson to better suit the class. This seems consistent with Stage C characteristics according to Sprinthall, Sprinthall, & Oja, 1986, wherein teachers appear comfortable in applying all appropriate teaching models and foster an intensive questioning approach with students so that students become engaged in their own learning.

In response to the question on discipline in the classroom that relates to a new teacher's role, SI-6 said:

One is knowing, understanding that by drawing the line, drawing boundaries, it's like, this is where I will take action you know. This is your line and if you continue, you will get a detention and that, explaining that to students but by drawing a line, I realize that, that doesn't mean they're not going to like you...I think that my nature as a person is I like these kids a lot and I, I think I'm really approachable and the last thing I would do is embarrass them or, you know, I make it an atmosphere where I want them to participate and it's fun to participate and I get excited, they get excited and enthusiasm is contagious. And I respect them but I also respect myself so that if I have to draw those boundaries, I do. You know? And I don't do it often. I don't take advantage of it but, I think kids like you when you're approachable...one thing that just occurred to me with relationships with kids is [CT] and I will write with them during the periods if they write for ten minutes a day and we write with them and then often time, in a class meeting setting, where they come into a circle, we'll share part of our journal and what we wrote and that was huge and getting down, like, to know a little more about us and see us more as a well-rounded person, not as like, this teacher that, you know, deflates and goes into the closet until tomorrow and then you blow her back up and there she is. So, I think, I am very, like, open with these kids.

SI-6' score on the constructed knowledge subscale is consistent with this response. She is reflective about her work, she adjusts the atmosphere to suit the style of her student, and she is willing to share a part of herself through her writing.

CT-6, in response to the question on whether or not they had a disagreement said:

Ah, no, no. I have been better with [SI] than others by being more direct and that's been a positive step for me. When something I think she could have done in a different way, I say more... the fact is I think they [SIs] are looking for help...she's terrific, we had her conference today with her supervisor and we've got to think well, what can we do to make this really challenging without overwhelming. That's one thing I need to follow up with her after the conference. And say [SI], I'm not looking for you to kill yourself just because you're so good and I want to, get you with more people [to have more experiences], but you tell me how this sounds because you have done a

great job. She's an exception that way. She willingly takes on challenges. She's very positive and upbeat...

These responses are examples of a pair who are engaged with their students and with each other, reflective about what they are doing, and open with students and with each other.

It seems that this pair have a very open and authentic (see Pajak & Seyforth, 1983) relationship. CT-6 is forthcoming with the SI about what he knows and does not know, SI-6 is willing to ask for help, and CT-6 is willing to be more directive (Glickman et al., 1995) when it might be helpful'. SI-6 recounted how they discuss a class occurrence:

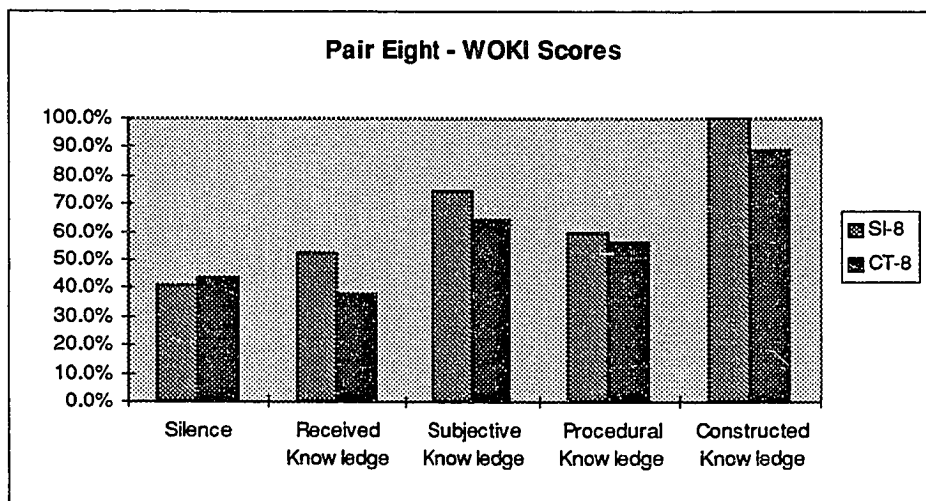
I go to school and I feel like I have a cheerleading section for me which is just amazing. You know, I have this person to talk to after every class and he'll say well, what did you learn from it? Not, not wow, that really sucked. Boy are you a shitty teacher. It's not that at all. It's what did you learn from it, how can you always be improving, so I think that those are good, are the factors that have made this great and just a great internship.

The questions the CT asks the SI after a class and the discussion that results point to a reflection-through-recollection within a collaborative atmosphere. Glickman et al. (1995) discuss collaboration and non-directive supervision as one which is suitable for a group involved in peer supervision, but I believe it has a place in the one-to-one supervisory relationship such as exists in these pairs. Notice that CT-6 is able to reflect-in-action (Schön, 1983, 1990) and read and flex (Hunt, 1975). This SI-CT relationship appears to continue to grow.

Table 20: Pair Eight PCM and WOKI Scores

Pair Eight	Role	PCM		WOKI			
		CL	Silence	Received Knowledge	Subjective Knowledge	Procedural Knowledge	Constructed Knowledge
Maximum Possible Score		3.0	32	40	28	60	28
	SI	2	13	21	21	36	28
	CT	1.5	14	15	18	34	25

Table 21: Pair Eight - Bar Graph WOKI Scores



The CL scores for SI-8 and CT-8 fall within the high range and moderate range respectively (see Table 20). The SI may be expected to be capable of using all appropriate teaching models, while the CT would be expected to be comfortable with only some. Notice that except for the silence subscale, the SI scored higher than the CT on the WOKI subscales. All of their scores on the WOKI are very close. Both SI-8 and CT-8 scored above 89% on the constructed knowledge subscale, and the SI scored 100%, placing them as constructed knowers. SI-8 scored at 52.5% on the received knowledge subscale, 75% on the subjective knowledge subscale and 60% on the procedural knowledge subscale. CT-8 scored at 64.3% on the subjective knowledge subscale, and 56.7% on the procedural knowledge subscale. See Table 21.

In her response to the question on grading participation, CT-8 answered:

I've done it different ways for different classes. I've had classes where they like to talk a lot, but they don't like to participate or help in an academic form. I haven't done it for a while, but I've reverted to, some classes, giving 10 points a day towards participation. You get 10 points if you take part in discussion or it's time to write at your desk or doing whatever the task is at hand. Five points if there are only a few lapses, and no points if you choose to be a disruption. It's funny, in some ways. You know, I mean, you find that, I don't like to have to do something like that. It's almost silly, kids don't understand it, it's almost queer to them. You just say that the grade will be given at the end of class every day, if you want to check on it, you do. If you have a question, you can ask me. Class participation, giving participation grades, is one of the trickiest things, and I've read a lot about it, and I've taken classes that this is a piece of the puzzle, because if you ever try to do a group project and you want to include participation as part of it, that's when you get a lot of parent and student angst, because sometimes they don't really know what they are getting the grade for...

CT-8's response seems to be more consistent with a CL score in the 2.0-3.0 range which corresponds to Stage C because a teacher who is in Stage C is innovative in

the classroom, is able to analyze how she grades for participation and adjust her method accordingly, and is sensitive to the needs of parents and students. CT-8 is reflective and inquisitive about her grading of participation, she sought new ideas by taking classes, and she has adjusted her grading accordingly. In this case, the interview seems to contradict the CL score.

SI-8, responding to a question about disciplining a student, said that she had an incident in her class in which a boy and girl who had been dating had an argument in class, complete with swearing. She sent them both to the office and continued:

They [rest of class] were all listening, they were. And, all looking at me too, to see what I was going to do. Which is, I remember being like that in high school too. And then after that, everyone was really, kind of bummed out, you know like, "ahh, that was bad." And it was quiet for a while, and I think I stopped doing what we had been working on and moved on to something, the fun thing that I had planned for the end of class. And did that to kind of get kids back out of that funk...so the kids were bothered by it, because they're all friends and when something happens, you know, they were upset about it and they were probably, I don't know, afraid to say something after that because I had kicked a kid [out of class] and another kid...and I wasn't able to keep doing, we were doing something, something kind of dry, and like vocabulary and review and I thought, "this isn't really going to work," after that so we moved onto something else, and I don't think we ever got back to vocabulary review which could explain the thirties and forties they all got on their quizzes, but yes. So, that was that, I think. This is hard when you're thinking this is on tape, and you think how do I answer this question, completely.

Her reaction to the incident and her response to this question seem descriptive of a constructed knower and a CL score in the range of 2.0-3.0. SI-8 needed all of her skills to deal with the incident. She was decisive and removed the problems from the class, then she turned her attention to the rest of the students. She was able to reflect-in-action and change her lesson and at the same time collect herself. She noticed that the students were "bothered by it" and she recognized that the vocabulary lesson would not

work at the moment. So she shifted to something that both she and the students could deal with at the time and that she already had planned for the end of the class. She responded appropriately to the emotional needs of her students, and she adjusted to meet the needs of the time. She was able to make an assessment and a decision based on the information that she had.

Pair eight seem to be well suited to each other. Their answers to the vignettes were similar and it is appeared that SI-8 is learning from CT-8. This pair taught one class together over the period of the semester and in that class they have learned from each other. According to CT-8:

So, we work problems out together and we met with the kids together and deal with those issues. Actually what I've been thinking about is how much I'm going to miss her. I keep telling her, "okay, someone might retire soon. We'll get you two classes here and this there and we'll find a way you can be an aide until a job opens up." Of course even if she were here, she'd have her own classes, so it wouldn't be the same. It's actually a very wonderful experience to have. As much as I like all of my colleagues, it's so rare that we have time to sit down talk about the things we could do or the things we had done, and how the class went. It just doesn't happen and [SI] and I are together all the time, so we go through most of the experience together. Even if I wasn't in the room, because it's her class, I know exactly what she's talking about, what she's been trying to do. I feel like I've been there, and I enjoy that. It's nice, we all ought to have, we all ought to share classes...I'm saying that I've learned from [SI]...I think I'd have higher expectations, from watching what [SI] did with the kids.

When they are not together in class, SI-8 and CT-8 talked about their classes and engaged in reflection-on-action and reflection-through-recollection. They stimulated each other to think about how to teach in different and challenging ways and they felt a very collegial relationship. SI-8 said:

I think sometimes we feel more like professionals that are sharing, because she's done some things that I have brought, you know, into the internship, with her class and you now, I've gotten a lot of ideas from her...I've learned

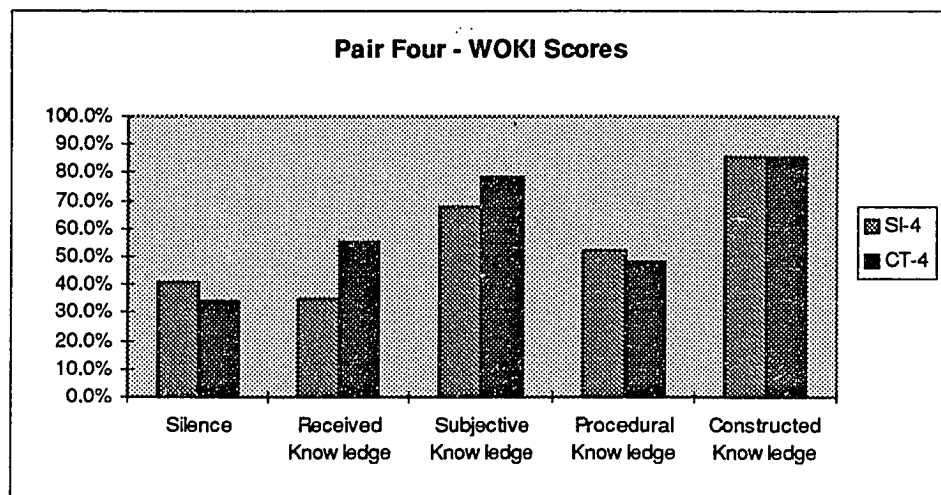
more this year about writing and grammar than I think I ever did in college, and she [CT] always says, “well, you can ask [SI] about that, [SI] has taken a lot of classes on that,” and I’m always thinking in the background, “don’t give me such a good reputation, I don’t know anything.” So, I don’t know. I think she has faith in my judgment, from some strange source that I don’t know where it comes from.

As mentioned in an earlier quote from CT-8, she felt that she learned from her SI as well. Notice that SI-8 is still trying to gain her confidence as evidenced in the last sentence of the quote. This confirms her 52.5% score on the received knowledge subscale, where one depends on outside influences for their knowledge. This too is probably a function of her role as an SI who is in both a learning and teaching situation daily. It appears that she has a good CT with whom to gain her confidence. They have formed the basis of an open, trusting, learning, and caring relationship.

Table 22: Pair Four PCM and WOKI Scores

Pair Four	Role	PCM	WOKI				
		CL	Silence	Received	Subjective	Procedural	Constructed
				Knowledge	Knowledge	Knowledge	Knowledge
Maximum		3.0	32	40	28	60	28
Possible							
Score							
	SI	2.3	13	14	19	31	24
	CT	3	11	22	22	29	24

Table 23: Pair Four - Bar Graph WOKI Scores



The CL scores for Pair Four (SI-4 and CT-4) are in the high range (see Table 22). They scored as constructed knowers on the WOKI. There is a difference in their scores on the received knowledge subscale on the WOKI with SI-4 scoring at 35% and CT-4 scoring at 55%, indicating that CT-4 may have some characteristics of a received knower. Both CT-4 and SI-4 have scores at higher than 67% on the subjective knowledge subscale, and SI-4 has a score just over 50% on the procedural knowledge subscale. There is evidence that the CT exhibits characteristics of a received knower and a constructed knower in her answers in the interviews. For example, she notes that it is very important to her that she learn from her SI whom she views as having a strong reading skill set. In this instance, the SI is the “expert” and the CT becomes the received knower. She also organized a Saturday workshop with a group of teachers to discuss multiple intelligences and there she hopes to learn from others as well. She has created a community of inquiry (Oja et al. (1993) in which she and other teachers can discuss teaching and learning ideas of mutual interest and concern. They can act as co-explorers in their pursuit of teaching improvements and excellence. These behaviors are consistent with the examples of the constructed knowledge subscale questions.

When asked what she would do if the lesson was going poorly, the SI-4 developed several responses: model the writing assignment for students, have a different strategy ready in case one did not go well, engage the students in the activities more fully. In response to question two, which includes a vignette about a new teacher who has a discipline problem and is uncertain about her role in the classroom, SI-4 said:

I am working on it. I see my role as,... to be able to facilitate learning. I don't want to be the teacher that everyone has to be quiet because someone said this or they said a swear word and she's going to find out. You know, I

don't, that doesn't interest me and I, people, little kids especially experiment with language that way and...if it happens, it happens. I don't want it to disrupt class but if they're talking about certain things that, you know, they should have that time to do that during the day and I don't want to be a fear figure...and right now I don't feel that I am. I feel kind of moving into that facilitating role...

SI-4 is reflecting on what she is doing in the classroom and what her role should be. She has made a decision that she does not want to be a "fear figure", and she believes that she wants to facilitate learning. What seems important here is that SI-4 is taking the time to think about who she is in the classroom and who she wants to be. She has observed her CT and now she is beginning to construct her own way of handling the classroom. Her response to the "what I think about rules" stem is reflective of her overall CL score:

I think some rules are necessary and important to maintain for the safety and well-being of people. Many rules, however, are unfair and benefit only certain people while hindering others' growth. I think rules need to be flexible, adaptable and teachers should be willing to change rules according to certain situations—be open to others' ideas, opinions, and needs.
[Stem score = 3.0/CL = 2.3]

On question four, CT-4 made some very interesting observations that were mirrored in SI-4's response. This question is about how a teacher would grade participation. CT-4:

This wouldn't be me at all so I have a real hard time...participation, I can see that counting but it's not to be given in a failing way. I would not want a, a letter grade or anything given to that but I might say he's progressing or successful or has mastered certain things. Grades in my classroom would be on how I see that child achieving according to what I think that child is capable of doing and projects that they might do and how that child is growing. I'm trying desperately to look at multiple intelligences in the classroom. Just learning about them but trying to look out that there are other ways of being smart and that our system only grades on book smart and number smart and that's not fair. ..there are a lot of children that have a lot of gifts that our education system is not paying attention to. So. [how does your

intern learn to do that?]) I've a strength in math and she has a strength in reading so we're trying to teach each other that. So this year for math as well as for this kind of thing is a whole year's experience. Don't expect to know it all until you leave and then probably don't expect to know it either... and some of it's, she still doesn't know and not through a fault of not explaining but I think it's an ongoing learning time. She will participate and has even just tried to write up statements about the children's social ability and reading ability in certain groups of kids she's been working for their progress reports. She will attend progress report meetings with parents and children. She'll be the fourth person...

SI-4 answered this question in the following way:

I think that's a hard thing to grade though, for me, participation...test scores and class participation because test scores I don't think reflect a heck of a lot and class participation, like I said, that, I was always very quiet, never said a word but I was always listening and so I think there would be, there would have to be more there, for me at least to comprise the grades than just test scores and class participation...assessing is done, it's very long and tedious but it sound like it's...very individual...working on something now where I've joined a group that meets once a month on Saturdays and [CT] might have spoken about this...that talks about seven intelligences, multiple intelligences, where students, everyone actually, might reflect more, might show that they have a higher degree of math knowledge than reading knowledge or music knowledge than social knowledge...they've set up parent-teacher conferences and I find this really interesting that they're allowing, they're inviting, actually, students to come into these conferences and take part in their own assessment as a learner and feel empowered that they have some say in what and how they're learning...

On this one topic, it seem that this pair are working together well. These answers confirm their placement in the high CL range which corresponds to Hunt's Stage C. This pair does "show evidence of originality in adapting innovations to the classroom," and they exhibit flexibility in their teaching. As constructed knowers they "pay close attention to the context in which a situation develops before making a value judgment," and they find it "important to understand why people think a certain way." Furthermore, CT-4's statement that she will "grade the child on what she thinks the child is capable of" may be evidence of her score on the subjective knowledge subscale which

indicates one who conceives of knowing as a “personal, private, and subjectively known or intuited” (Belenky et al., 1986, p. 15). CT-4’s decision to grade according to where the child is, lends further evidence to her ability “read and flex,” show sensitivity to her students, and make a decision in context, all support for her placement with a high CL score and as a constructed knower.

SI-4 described her relationship with her CT as follows:

It’s definitely not a teacher-student all the time. I feel in the beginning, I felt well, not even since the beginning, I feel like we’ve been colleagues all along and sometimes, I take on a student role because I am learning from her but she does the same with me...I can teach some things and I have and we share a lot of information. She has many more resources than I do but I feel I have a creative sense where I can come up with ideas or help out with ideas and even with the other teachers when we get together and talk about social studies or something, I feel my opinion is valued and I can add to the discussion and add in my own ideas...we’re very fortunate to have that...maybe it’s that relationship, that colleague relationship, which I was really looking for when I was coming in as an intern and the student-teacher relationship and being a gopher...

This statement reflects SI-4’s constructed knowledge score on the WOKI: she knows she has some good ideas of her own, she knows that she can learn from others by discussing issues with them, and she knows she can have a collegial relationship.

Pair four are joined in a relationship that can be characterized by their ability and desire to listen to each other and to teach each other what they know. Further, the CT has encouraged the SI to take risks and feel safe in the classroom to do so. The SI has responded to the challenge. The CT and SI engage in discussions about events in the classroom and in doing so they have learned to reflect-on-action and reflection-through-recollection to improve their teaching. The SI has taken advantage of the “cluster” site aspect of the school and talks with teachers other than her own CT about teaching. The

CT has employed collaborative supervision techniques (Glickman et al., 1995) that have proven to be very successful. She encourages the SI to think about her teaching and reflect on what is happening.

Summary: Collaborative Pairs

The collaborative pairs overall showed a relationship between intellectual development and collaboration. These pairs alternately shared their classroom, their knowledge, their wisdom, and their skills with each other. The SI and CT in each pair took turns taking the lead in the classroom, they reflected on classroom events with each other and together devised new teaching plans. The CTs in these pairs provided the atmosphere for their SIs to take risks; they showed trust in each other, were able to disagree, and come to a resolution. Scores on the subjective knowledge subscale by four of the people in this group are not clearly seen in the interviews. Perhaps this is because the interview questions did not relate specifically to matters of intuition or private, personal knowledge. The authors of Women's Ways of Knowing asked questions that specifically related to how the women analyzed dilemmas or situations. The current research did not include such a question and this may be the reason that subjective knowing does not appear to be confirmed in the interviews.

In the next section, there is a discussion of the non-collaborative pairs. The behaviors exhibited by the non-collaborative pairs is in direct contrast to the collaborative pairs.

“My Sense Is that [SI] Is Much More Comfortable Working Separately”:

Non-collaborative Pairs

There are four pairs that did not collaborate according to the definition at the beginning of Chapter 5, Pairs One, Two, Five, and Seven. Pair Seven is teaching at the secondary level, and all other pairs are teaching at the elementary level. These pairs had difficulty communicating with each other for basic day-to-day classroom operations, such as planning lessons. When a major issue arose, it was difficult to resolve. When non-collaborative pairs disagreed, they found it difficult, if not impossible to compromise. Unlike the collaborative pairs disagreement threatened their relationship rather than providing an opportunity for growth. They were not involved in a collegial relationship, and learning was not reciprocal. None of the CTs felt they learned from the SIs. In some pairs, the SI reported that she was learning. This was in marked contrast to the collaborative pairs where both SI and CT learned from each other and in at least one case, the potential for learning was the reason that the CT chose her SI.

In three of these pairs (Pair One, Pair Two, and Pair Five), both SI and CT have expressed a desire to quit the internship, and in the fourth pair, CT-7 has expressed a desire to quit the internship. Pair Five in this group separated in December, 1995. Three of these pairs are looking forward to the end of the internship. Despite their difficulties establishing a collaborative relationship, pair seven is attempting to learn from their experiences with each other.

Communication

The lack of communication between the members of pair two illustrates the issue of communication for the non-collaborative group. For example, SI-2 feels that she is not doing well in her internship and that she is not getting enough feedback from her CT on her teaching even though she wants it. CT-2 feels that the SI does not want her feedback and therefore she is reluctant to give it. When SI-2 was planning a “mini-solo”, it was a “stressful,” time for her.

I was spending an awful lot of time here, working really hard and just feeling frustrated and I think that [CT] and I weren't communicating very well then [when SI wanted to quit]...and I know we're [SI-2 and another SI] feeling more pressured [than other SIs in different schools] and we're working a lot. I mean, I'm here from seven in the morning until 5:30 at night and I feel like that's not enough some times. Work on it at night, work on it on the weekends. I feel a lot of pressure. I feel like I don't do well, like I'm not doing well here...I think at the time I was doing a mini-solo, so I probably had three days that I was planning for, you know. Just stressful. It was stressful...

It was supposed to be a solo so it was supposed to be on my own. *That was the impression I got* [my emphasis]...so I guess that's why [I felt like quitting].

Notice that the SI speaks tentatively, and it was her “impression.” She did not check her impression with the CT who was feeling quite differently about her solo weeks.

Her CT said:

So when I say to her, your solo week's coming up, what should I be reading aloud now, she's like, what does that have to do with anything? And I'm...in my mind as a planner I'm thinking, if you want to do a “read-aloud” during your solo week that's with the content of your teaching, then it's going to affect the size of the “read-aloud” that I pick now. You know, or do you not care what the “read-aloud” is when your soloing? And that's fine, but I don't want to deny you, through my action...that choice or that privilege. [So you're thinking that in your head. Are you saying that to her? Are you expressing that thought?] Yeah, yeah. With not a lot of response I don't

think...I also wonder if she doesn't understand, you know, like it's not that big of a deal to her.

The CT characterizes herself as a planner, and she believes that the SI is not.

The SI characterizes herself as a planner too, but she is reluctant to ask the CT for help.

She does not feel that she can ask the CT and the CT recognizes that:

...SI doesn't want to take any more of my time than she's allowed to or that is her share. I'm real concerned about the fact that...when I say, why don't you talk about your lesson plans with me beforehand? She'll [SI-2] say to me, because you're so busy and I don't want to take your time.

So while CT-2 recognizes that the SI does not want to take too much of her time, she fails to take action to change it. And while the SI wants feedback on her teaching, she does not always ask for it. In her response to "when I am not sure" on the PCM, SI-2 answered:

I find out, or I practice more, or I ask. [Stem score = 2.0/CL score = 2.3]

This answer is characteristic of her behavior in this internship, where she is attempting to do everything on her own because it is her "impression" [see previous quote] that this is the way it should be. She does not check this out. On the other hand, CT-2's first response to the same PCM question was:

I generally say so. When I am not sure about an issue I think about it. The issue goes on the "back burner to perk." Unfortunately kids and classrooms don't wait for you to know, so you often need to act. If the situation is not one you can say, "let me think about it," I sometimes find I have taken the wrong direction. In this case I evaluate the impact and go on or go back to the person and discuss my concerns. [Stem score = 2.0/CL score = 2.7]

First notice how these responses are very different from those of the collaborative pairs and furthermore, that the CT and SI are very different. The SI takes the approach of handling it [not being sure] by finding out, or practicing more, and

finally she will ask. On the other hand, the CT states that she will speak up if she is not sure. These two statements are very different. Given her response, does the CT expect/is she waiting for the SI to ask for help? Is the SI reluctant to ask for help? This pair did not apparently consider or ask these questions of themselves or their counterpart.

Disagreement

CT-5 and SI-5 are the pair who have separated. In their first interview, in response to the question about a disagreement, both pointed to the same problem in the classroom with a student with Attention Deficit Disorder (ADD). The SI's approach was to be more strict with the ADD student, while the CT was more lenient. Each of them criticized the other in the interview for their approach with the ADD student.

SI-5 said:

Sometimes she's [CT] like oh...okay honey, well. And I'm more of, you need to sit in this chair and you'll just, she'll sit there and she'll bounce with her chair...[CT] has much more patience with [ADD student] than I do but at the same time, I feel bad she's [ADD student] all over the place and I'm not reprimanding her...but the two of us, together, are handling the situation differently.

CT-5 said:

And [SI] really felt very strongly that she was going to cure this little girl at the beginning of the year and was much sterner with her than I would have been and much more demanding. You will sit in your chair. You will do this and nagging. I mean it was, she was after her all of the time and she was going to fix her. And I finally had to speak up because I let it go and let it go and I said, you know, you just can't. You're not going to fix her, number one. She has a problem. You can help her focus. You can use strategies to help her but you aren't going to fix her.

While they had this disagreement, they never resolved it. Each person in the pair felt that the other was wrong in handling the situation with the ADD student, but they

did not discuss their strategy to a conclusion where they might have come to a compromise on how to handle it. Instead they continued their own interpretation of the situation and more importantly; they retained the position that the other person was wrong. This incident is emblematic of their relationship which resulted in their separation at the end of the first semester.

Learning

CT-1 and SI-1 are a pair in which only the SI is learning. The CT noted that the lack of reciprocity in their working relationship has been a disappointment to her. In the past, CT-1 has had interns with whom she:

...mostly talked about education and...it was very exciting, very stimulating, sometimes very draining, but it was worth it because I got to look at my teaching through her and got to see how she did things either the same or differently so that I, you know, there was a lot of give and take. A lot of ideas of hers that I've incorporated into what I do and, that's, I'm discovering, important to me. Because I feel I learn as much if not more from interns about my own teaching that the intern might learn [and it's not happening this year].

Pair Seven have attempted to collaborate and, by their own report, have been successful on one occasion. It seems that both members of pair seven see collaboration as an ideal, but they are struggling to achieve that ideal. In the second interview, the CT said: "I like it best when we are warm and cuddly at the podium teaching together." For CT-7, that is a desirable outcome of having an SI. At times, they have achieved that ideal, but not often. SI-7 would like to work in a more collegial way with the CT. SI-7 said:

...she was treating me very much as another student and not as a colleague...and for a while rather than communicating that I would say, why is it then you're imposing this on me and you're not doing it [journal writing] yourself? If that's your logic behind it that UNH tell us we have to [then we

should both do it]. You know, and I think now we're more like we just sit down and be like okay, let's find a different solution here because...or you know, not have you give this to me as an assignment...so now, we usually try to sit down and, and talk about stuff like that...and I'm sure it will get tense again for a while and we'll probably have a sit down and we'll talk and...it will work itself out.

This statement by SI-7 indicates her hope that through talking their relationship will continue to evolve. On a similar note, CT-7 recounted one of their "rough spots" where they each had conversations with the university supervisor and finally talked with each other. After that time, their relationship and the internship improved. They continue to work at it. CT-7:

I have respect for her [SI-7], more respect than I did before. Today she sounded like she was going to procrastinate about taking all those classes, and I decided, I got a little up tight, and I said, "Oh, no, no, no. [SI] said, "I don't know if December 1 is, maybe we should be looking at two or three weeks, because I didn't know that the term was going to go on." I said, "well, what difference does that make?" So today, I just said to her, "now you don't have to worry about it, because I'm going to be in this class the whole time," and one of the kids that she was worried about was probably going to be removed from the class. Today, actually, I think that, that came from her. I would have assumed before, my assumptions would have been different...my assumptions now are a little bit different, although there's still that little bit of questioning, but, we're going to get to sit down today, to talk. Then that's our regular meeting. I'm going to bring that right up, hopefully in a non-threatening way, and say, "You had me worried," and I feel like was talking to the old [SI], instead of, or I think I might start out by saying how pleased I am with everything and then say, "There's just one little thing, and one of the things that we agreed to is to communicate better. So I want to know what you said that. I want you to know why I think that we should go ahead with the plan." So, that's how I think I'll try and do it.

CT-7 is also attempting to work more openly with her SI and there is hope that the relationship will continue to develop.

It is interesting to look at the answers that each of the SIs and CTs in this non-collaborative group gave in response to the paragraph stem on the PCM "when someone

does not agree with me...”. Notice SI-1 and CT-1 say they will listen but they are determined not to relinquish their position. They are interested in expressing their ideas, not in compromising.

SI-1:

I am open-minded and listen to all sides of the situation. If the person can relate sound, logical reasons for their thinking, I might even rethink my stand and learn to see the situation through their eyes. Again, if it's a situation that we're not agreeing about, I can accept that. If it's personal, then I am less open-minded! Usually I am pretty strong about my convictions and can offer logical, thought-out opinions and ideas, so I can be pretty determined, even if I listen to the other party. [Stem score = 2.0/CL = 2.5]

CT-1:

While I may not make great efforts to try and win someone over to my side, neither do I relinquish my opinion. Part of me may wish this person agreed with me, but I can acknowledge difference among individuals. I am not one to push for a debated issue. I appreciate discussion but not arguing. [Stem score = 2.0/CL = 2.3]

Notice how SI-2 and CT-2 both stated that they were willing to compromise and listen to the other person, yet this pair, too, did not communicate; CT-2 preferred that people be open with her, and SI-2 was reluctant to impose on the CT's time. Neither person in this pair were able to draw the other out as evidenced by their inability to meet regularly, the SI's reluctance to "take the CT's time" and the CT's reluctance to become more directive with the SI. For example, if they missed a meeting, the CT did not reschedule. SI-2's response to "when someone disagrees with me":

I talk about what they don't agree with, and why. I listen to what they think, or feel. I may change my mind, compromise, or keep my initial thoughts. It's ok to disagree as long as everyone is respectful. [Stem score = 3.0/CL = 2.3]

CT-2:

In a similar way to criticism I try to discuss the issue to make sure both of us understand the issue. I sometimes find that we agree on the fundamentals but have different ways of getting there. Often disagreements are opportunities to learn more about the other person, where she is coming from and is important to her. I would rather work with someone who openly expresses concerns rather than keeping them inside. [Stem score = 2.5/CL = 2.7]

For SI-5 and CT-5, there is no hint that they will compromise when someone disagrees with them. In a student intern-cooperating teacher relationship that goes over a period of nine months as this one does, it is inevitable that the pair will disagree at some point. Yet, each person in this pair wrote that she was concerned with expressing her opinion and justifying her position, not with coming to an agreement which is a characteristic of a collaborative relationship. SI-5:

I have always felt that everyone deserves the right to have their own opinion. When someone disagrees with me I like to hear their point of view and respect me with the time to express mine. [Stem score = 2.0/CL = 2.3]

CT-5:

I try to find out what other people's opinion is and why. I analyze my position more completely and try to explain my feelings better. I also want to be able to justify my position and answer questions intelligently. [Stem score = 2.0/CL = 2.7]

In Pair Seven, the SI seems to be open to looking at the disagreement from the perspective of the other, while the CT is concerned with getting respect for her views.

SI-7:

I can accept disagreement pretty well. I do not like when someone disagrees with me but is ignorant of the subject matter and refuses to admit it. I don't have a problem trying to view another person's perspective. [Stem score = 2.0/CL = 2.1]

CT-7:

I try to convince them to see my viewpoint and at least acknowledge that my opinion is valid. I hate it if they categorize me, or label me because of my opinions. I am not just my political views. I hate to be judged or dismissed by people who disagree. I expect respect for my opinions.

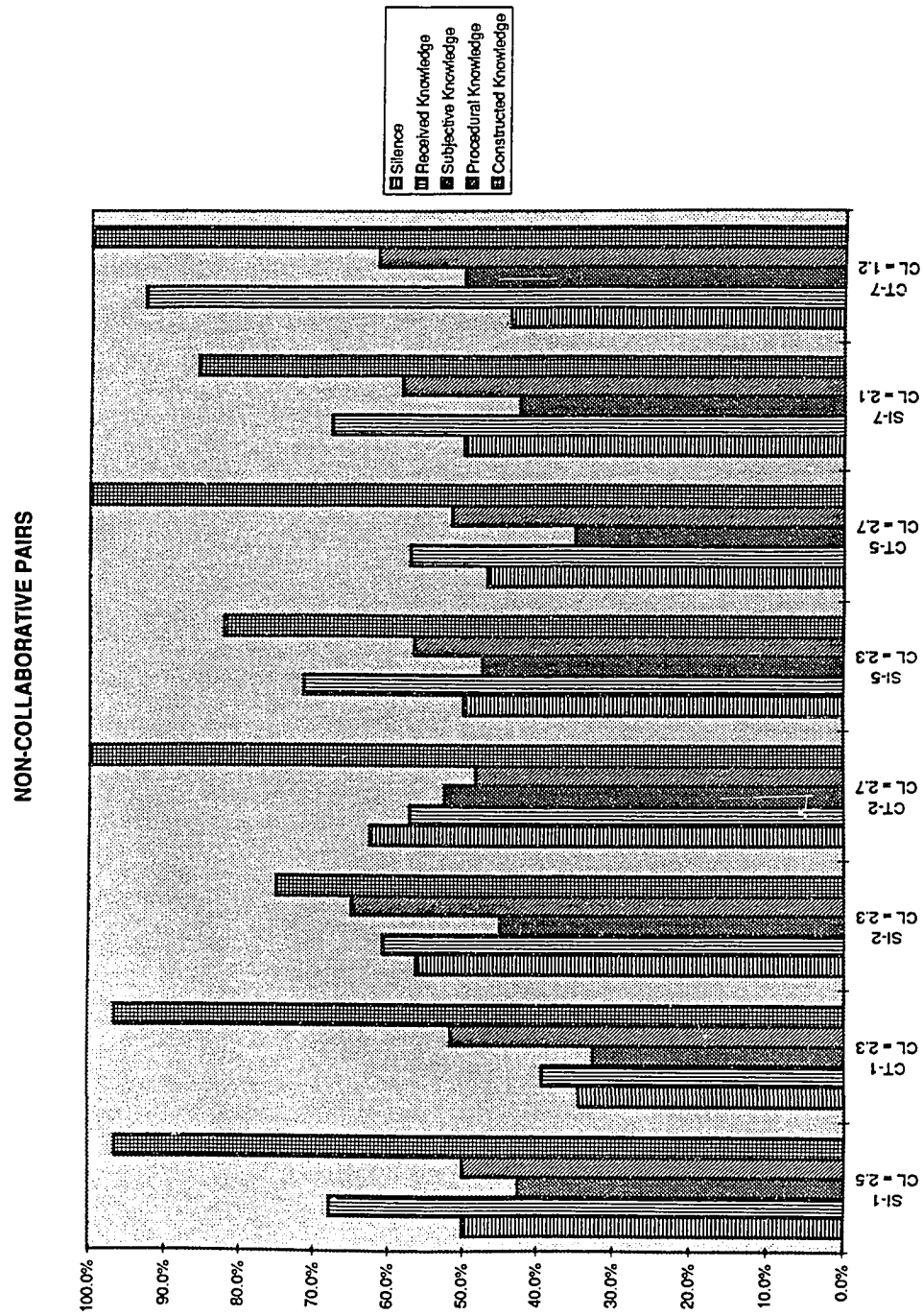
[Stem score = 1/CL = 1.2]

The non-collaborative pairs stood out for their lack of communication with each other, their unwillingness to listen to each other, and their inability to resolve disagreements. In the terms of the definition of collaboration, these pairs were not often engaged in listening or sharing, resolving or compromising, or trusting and being trusted. There is one bright note among the pairs, and that is CT-7 and SI-7. They seem to be working on their communication and they are reflecting on their relationship independently. If they continue this work, they may begin to reflect on their relationship together, which should enable them to develop a more collaborative relationship.

Scoring Profiles for the Non-Collaborative Pairs

In Table 24 you will see the summary of the WOKI profiles for the non-collaborative pairs.

Table 24: Bar Graph - Non-collaborative Pairs - WOKI and CL Scores



For the non-collaborative pairs all of the CL scores are two (2) or above with the exception of CT-7, who scored at a level of 1.2. This means that all of the SIs (SI-1, SI-2, SI-5 and SI-7) and CT-1, CT-2, and CT-5 should be capable of exhibiting behaviors corresponding to the Stage B and C behaviors previously noted. CT-8 should be capable of exhibiting behaviors corresponding to Stage A and B.

The profile of the scores on the WOKI subscales is considerably different for this group than the collaborative group. The WOKI profile for the collaborative pairs shows all individuals with high constructed knowledge scores and very few other scores in either the moderate (over 50%) or high categories. On the other hand, the profile for non-collaborative pairs shows five scores at or over 50% on the silence subscale, seven scores over 50% on both the subjective knowledge subscale and procedural knowledge subscale, and consistent with the collaborative pairs, all individuals of the non-collaborative pairs had scores greater than 75% on the constructed knowledge subscale. Both SI-2 and CT-2 had moderate Silence scores that were the highest of both groups. Not surprisingly, their relationship was characterized by a lack of openness and discussion.

The number of scores across the WOKI subscales in the moderate to high range for the non-collaborative pairs indicates that this group uses multiple ways of knowing as opposed to the collaborative pairs group who primarily use constructed knowing. For examples of items corresponding to each of the WOKI subscales, see Appendix C.

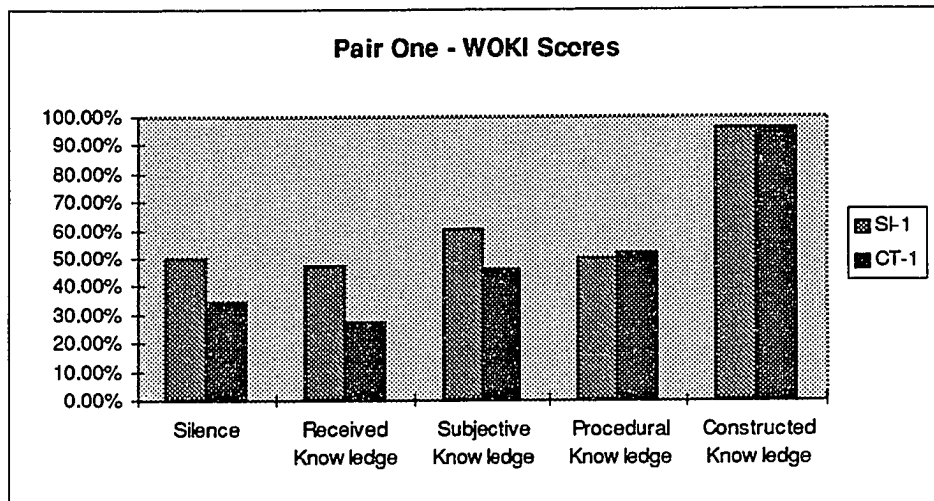
In the next section, there is a pair-by-pair discussion of the interviews related to the CL score and scores on the WOKI subscales. The scores of the pair on the two

measures is shown in tabular and graphed formats.

Table 25: Pair One - PCM and WOKI Scores

Pair One	Role	WOKI					
		PCM					
		CL	Silence	Received	Subjective	Procedural	Constructed
			Knowledge	Knowledge	Knowledge	Knowledge	Knowledge
Maximum		3.0	32	40	28	60	28
Possible							
Score							
	SI	2.5	16	19	17	30	27
	CT	2.3	11	11	13	31	27

Table 26: Pair One - Bar Graph WOKI Scores



SI-1 and CT-1 both scored in the range of 2.0-3.0 on the PCM, their scores on the constructed knowledge subscale and the procedural knowledge subscale are quite close, while the SI scored at 50% and 60.7% respectively on the silence subscale and subjective knowledge subscale. See Table 26. They responded to the vignettes in a way that indicates they are working together well. For example, the SI made many references to consulting with her CT on the matter of handling a lesson that did not go well, handling a discipline problem, and learning how to grade. When the SI had a lesson that was “too challenging” for her students she said:

Well the thing that I learned is, and this was also early on in the year,...we hadn't seen enough of where children were and what they were capable of, so now I would have more in my mind of who is where,..maybe who to pair up with who, or also the thinking that if I had that specific example to do over again I know that I would have introduced it gradually because it was the type of activity that you could introduce the basic concept and then gradually work in the other elements and I would have tried to do it all at once...

SI-1 shows here that she is reflecting-through-recollection on her own and with her CT. SI-1:

I mean basically when it was done I had said...it looks to me like that actually having them recording [the equations], the recording piece was too much and they have just....and that if they could have just played it [the game] without having to worry about that, and she [CT] agreed and she said that. And we did a lot, I mean. Basically what it was, it was a math game with addition and subtraction going in opposite ways on a game board, and depending on the roll of the dice you wrote the equation that went with it and it was just too much, and we both agreed that that was the case and that we could have even done it without numbers to start with and just got, given them the idea of moving back and forth, and then introduced the idea of a number line and introduced the recording piece of the actual equations.

Together, they came up with a different way to approach this lesson and SI-1 was able to learn from this experience. This illustration confirms the SI's received

knowledge score (at 47.5%) as she relied on CT-7 to help her with the solution.

Because the SI is in a new learning situation, this would be expected.

Evidence of the SI's silence score and received knowledge score surfaced when she talked about modeling the CT's behavior in the classroom. A person who is characteristic of the silence position will keep to herself and not question, so this may influence her desire to depend on the CT for direction. Because this is a new learning situation it is expected that the SI would model the behavior of her CT at the beginning of her experience. On the question regarding assessment, SI-1 indicated that she was learning from CT-1 by attending the parent conferences. One of her goals for the internship is to learn how to do an assessment. CT-1 in this pair felt that SI-1 was doing a good job, had defined her role well, and was modeling the way the CT handled some situations. The CT noted that a situation occurred in class that she felt the SI should have handled. The SI did not handle it, so the CT did. Reflecting on it later, the CT felt that she should have talked it out with the intern and made a joint decision on how to handle the situation. CT-1:

I can think of one instance where [SI] felt kind of caught and felt afterwards that maybe she should have acted more directly. And so she more or less turned it over to me and said this is what happened and you know she wasn't sure how far to go with it...it was an instance where it was a second offense and the child...so I followed it up and I, in looking back I probably should have talked with her about it and then had her go back and follow it up..and follow it through, but you know, on the other hand...she may not have been ready to do that.

This CT has taken the time to reflect on what she or the SI has done and is exhibiting characteristics of a teacher who is in Hunt's Stage C. She is flexible, she is willing to question herself and her judgments (analyzes and evaluates), and she is willing

to admit her mistakes. In this case however, the CT did not go back to the SI to discuss her feelings. This indicates that she may be more of a separate procedural knower, than a connected procedural knower.

Interestingly, CT-1 does not feel that she is benefiting from the SI-CT relationship. When asked if she would like to quit as CT, she answered in the affirmative. She feels that SI-1 is “technically” very able, but she does not feel that the SI has connected with her or with the students. CT-1 has addressed this with her SI, but it sounds like there was not much of a conversation and the CT does not at this time know how to address it further. This behavior may also confirm the SIs 50% score on the silence subscale. According to the CT, SI-1 does not express herself either to her students or to the CT. CT-1:

...and [SI] said that when she was looking for an internship she made a conscious decision to come and be with me rather than going somewhere else because she felt that she was a lot like me. And I, I don't know how to take that. Um, she didn't go with someone else who might have had a whole different personality and a whole different style. And so that raises questions in my mind, you know, do, “am I really perceiving myself as others perceive me? You know, is she really like me? You know, what are the parts of her that are like me?” So it's just raising lots of questions in my mind and she said, you know, this is what I've worked for. I'm real happy in your class. I respect, you know, what you do and how you do it and I'm, I'm learning a lot. So she said it all then. She hadn't been saying it too often all along. We started with a journal in the fall where we, you know, I'd write then she'd write then I'd write then she'd write, and she's had the journal for weeks now and I haven't seen it, so there's not that, that feedback with dialog.

We just have conversations, um, at lunch or recess or before or after school and when we're not specifically planning something for the classroom we kind of talk about inconsequential things, you know, the weather, etc. And, um, I guess than I'm just feeling myself kind of take a back seat and figure, and then the other part of it is that, you know, she's doing "A" work, you know, and she got an A for the semester and she'll probably get an A for this semester, but, you know, I've talked with her supervisor and, and she feels the same way that, that [SI] is very, um, capable and bright and she wrote a wonderful

paper... shared the paper with me and talked a lot about it so I know she's learning all of this and that she appreciates it, um, but I just, I, I'm, for lack of a better word, you know, that, that excitement is, comes across in a little subdued way and I never thought I was like that.

Because of this conversation with the SI that the CT recounted, CT-1 is now reflecting on what it is that she does, or does not do, that causes her SI to be distant from her students.

When asked how she would describe a good SI-CT relationship, CT-1 answered:

...exciting, stimulating, sometimes very draining, but it was worth it because I got to look at my teaching through her and got to see how she did things either the same or differently so that I, you know, there was a lot of give and take. A lot of ideas of hers that I've incorporated into what I do and, that's I'm discovering, important to me. Because I feel I learn as much if not more from interns about my own teaching than the intern might learn.

CT-1 is not getting feedback on her own teaching from SI-1. Their relationship lacks the reciprocity she usually finds "exciting, stimulating, sometimes very draining." As a result, she feels that the internship is not rewarding for her and she would prefer to separate.

When CT-1 has been open about how she feels about the "connectedness" of the SI, the SI seems to have a difficult time hearing. This is confirmed in the SI-1's answer to the PCM stem "When I am criticized...":

I become defensive, but I may or may not react visibly. Very rarely am I outraged enough to create a confrontation. It really depends who the criticism comes from and the nature of its delivery. Constructive criticism is more well-received (and appropriate) than personal attacks—deal with actions, not someone's person. When I am criticized, I'd like to think that I evaluate the particular situation—is the criticism justified/founded, who is this person to me, etc.—and gauge my response accordingly (if worthy of a response, what kind?). [Stem score = 2.5/CL = 2.5]

When the CT responded to the same stem on the PCM, she said:

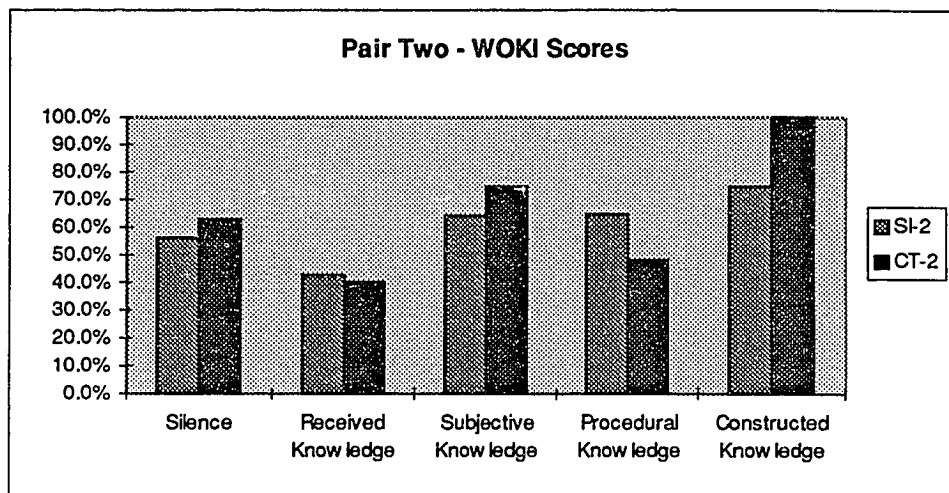
I try to be objective and to understand the criticism. If the criticism is something I am already feeling myself, then I listen to it and accept it as an affirmation. I also accept it if it is related to my behavior, but not if it is an attack against me, or an overgeneralization, "You always..." (for instance). Criticism can be helpful and can be an opportunity for me to reevaluate what I am doing and try to improve. Criticism that is a personal attack is, in my opinion, a reflection of the other person's insecurities.
[Stem score = 2.0/CL = 2.3]

Both of these responses indicate that SI-1 and CT-1 will listen to criticism if they agree with it, or if it is an "affirmation" of what they already know. This indicates that they are not inclined to be open and it should not be a surprise that they have reached an impasse in terms of developing a strong, open, collaborative relationship, in which both of them can learn and grow.

Table 27: Pair Two PCM and WOKI Scores

Pair Two	Role	PCM	WOKI				
		CL	Silence	Received Knowledge	Subjective Knowledge	Procedural Knowledge	Constructed Knowledge
Maximum		3.0	32	40	28	60	28
Possible							
Score							
	SI	2.3	18	17	18	39	21
	CT	2.7	20	16	21	29	28

Table 27: Pair Two Bar Graph WOKI Scores



SI-2 and CT-2 are both in the same range on the PCM and should exhibit behaviors consistent with Stage B and C teachers. See Table 27. On the WOKI, the SI and CT scored at 56% and 62% respectively on the silence subscale, which are the highest silence scores of the entire group of interviewees. On the subjective knowledge subscale, SI-2 scored at 64.3% and CT-2 scored at 75%. SI-2 scored at 65% on the procedural knowledge subscale. CT scored at 52% on the subjective knowledge subscale, the SI scored at 65% on the procedural knowledge subscale, and there was a sizable difference between their scores on the constructed knowledge subscale, with the SI scoring at 75% and the CT at 100%. See Table 28.

In response to the interview question on how to grade participation and deal with questions from parents and students CT-2 answered:

I think this brings up a really interesting question because I've worked a lot with kids. I've looked at, personally, what dictates participation in the class and how much of that is within an individual's control. And I'm, I think I've had a lot of classes where people's voices have been denied because of other people in the class. So that's not a very fair way to grade. You know if a kid doesn't talk because they feel put down when they talk, or not even like really put down but do they just feel like when they say something, people go on talking with what they said before they said anything. You know like completely ignored and they stop talking. That's not lack of participation on the student's part. That's something in the classroom. So I guess if I were looking for participation, I would make sure that I had some ways to look at oral work in different contexts, like different sized groups, instead of like if I have twenty kids in my class, I don't expect that everybody will be able to talk in front of twenty kids.

CT-2 recognizes that she has to tailor her assessments and criteria to meet the needs of her students. This fits with the Stage C teacher characteristics, particularly "exhibits careful evaluations based on objective criteria according to the level of

assignment.” This also seems to coincide with a constructed knower as well, who can look at issues from many different views and make a decision or judgment.

In this pair, SI-2 has been learning from the CT about assessments and she has been attending parent conferences and finding those very useful. This behavior is consistent with a received knower, who is comfortable taking direction from someone in authority. In response to the question about having a disagreement, the SI responded:

No, I can't imagine disagreeing with her. I could imagine disagreeing with her in a way that she would respect my opinion, I would respect hers. Uh, I know, for the most part she's really supportive...I can see her sitting down with me and telling me what she thought, but...well, I can see her disagreeing on things, like being frustrated with each other, but I don't see like it's the kind of thing that gets in the way, or is counter-productive.

On the PCM, in response to the “when someone does not agree with me...” stem, SI-2 said:

I talk about what they don't agree with, and why. I listen to what they think, or feel. I may change my mind, compromise, or keep my initial thoughts. It's o.k. to disagree as long as everyone is respectful.
[Stem score = 3.0/CL = 2.3]

SI-2's response on the PCM seems to agree with her interview response on disagreement. In both cases she listens and is respectful and expects the same from her counterpart. She is also willing to compromise and resolve the issue.

The CT did not identify a time when they had disagreed, yet for both members of this pair, responses to the interviews suggest that they are not building a strong relationship. SI-2 feels that she does not get feedback from the CT on her teaching and the CT feels that the SI prefers to work separately, reflecting behaviors typical of the perspective of silence. In response to the question regarding whether or not they would like to quit the internship, both SI-2 and CT-2 said yes. CT-2:

I feel like a lot of times I leave opportunities, I try really hard to leave opportunities open for an intern and I think I'm pretty good at sharing my class and sharing the authority..but there are times when it becomes harder to share when you don't get response. When you feel like you're leaving things open and there's no closure to them. And sometimes that's fine. I'll say, you know, if you have an idea for the next lesson, let me know. Otherwise, I'll start something. And then it's like, if you don't get to me by the deadline, no problem. But there's other times when I feel that, I've left things open longer than I feel comfortable with because, you know, I'm not sure if we're working on this together or we're working on it separately. My sense is that [SI] is much more comfortable when we're working separately. That she's much more comfortable taking things away, coming up with ideas and just doing them rather than showing me plans ahead of time, or you know, getting feedback or...and I find that really difficult.

SI-2 said:

...just feeling like I was spending an awful lot of time here, working really hard and just feeling frustrated and I think that [CT] and I weren't communicating very well then. So since then we talked a little bit. It's gotten somewhat better...I feel a lot of pressure. I feel like I don't do well, like I'm not doing well here...just feeling a lot of pressure to do a lot of things and feeling like I didn't know how to do them I guess.

SI-2 spoke with the university supervisor about the lack of communication. The university supervisor advised her to speak to her CT. Given that both of them scored over 50% on the silence subscale this should not be surprising. They are both either silent or they are relying on their intuition for guidance (over 50% on subjective knowledge subscale). Or it may be that SI-2, who has a high procedural score, prefers an analytical approach to knowing while CT-2 prefers a connected, sharing, and collaborative approach to knowing. In either case, their silence precludes development of a shared understanding.

In this pair, CT-2 feels that SI-2 prefers to work separately (as she [the CT] did when she was an SI). The SI feels pressure to perform well with little feedback and long work hours (some of it self-imposed), and she feels that she does not get any feedback

on her teaching from her CT. In their written responses on the PCM, they both appear to be open to disagreement and willing to discuss it, yet, in this internship, they are finding it difficult to communicate on a day-to-day basis. For example, CT-2 responded to the “disagree” stem on the PCM as follows:

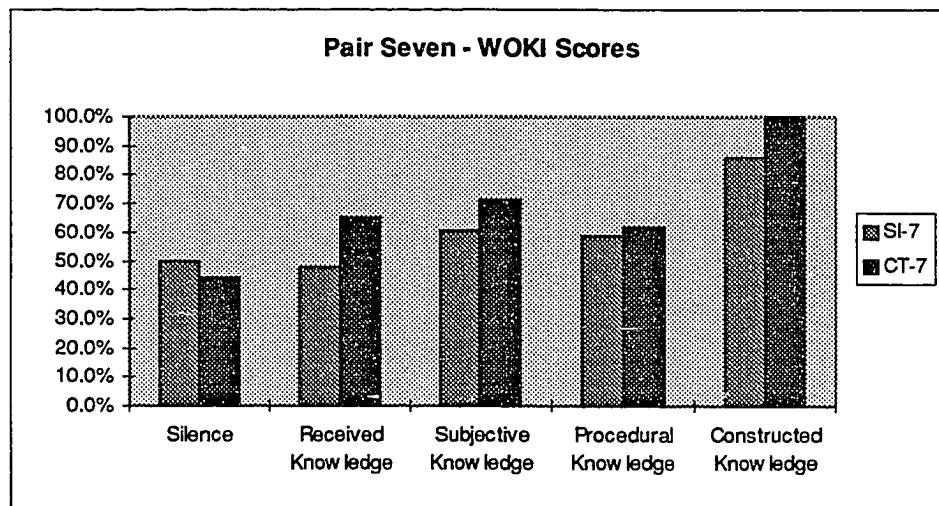
In a similar way to criticism I try to discuss the issue to make sure both of us understand the issue. I sometimes find that we agree on the fundamentals but have different ways of getting there. Often disagreements are opportunities to learn more about the other person, where she is coming from and [what] is important to her. I would rather work with someone who openly expresses concerns rather than keeping them inside. [Stem score = 2.5/CL = 2.7]

CT-2 would prefer that someone be open, and the CT noted in her interview that she believes SI-2 “prefers to work separately.” This pair needs to talk with each other some more. They seem to like each other, but their lack of openness and their penchant for silence stands in the way of the development of a collaborative relationship. It is possible that a more directive approach (Glickman et al., 1995) would work in this relationship. If CT-2 urged SI-2 to engage with her by using a more directive approach, they may find some common ground on which to build.

Table 29: Pair Seven PCM and WOKI Scores

Pair Seven	Role	PCM		WOKI			
		CL	Silence	Received Knowledge	Subjective Knowledge	Procedural Knowledge	Constructed Knowledge
Maximum		3.0	32	40	28	60	28
Possible							
Score							
	SI	2.1	16	19	17	35	24
	CT	1.2	14	26	20	37	28

Table 30: Pair Seven - Bar Graph - WOKI Scores



Pair seven are an interesting pair because they seem at times like they may collaborate, but then they do not succeed. The PCM scores for this SI-CT pair fall into two different PCM modes, the SI has scored in the range of 2.0-3.0 and the CT has scored in the range of 0-1.4. See Table 29. For Hunt (1971,1978) this would be considered a mismatched pair. The WOKI scores offer an interesting profile. The CT has scores of 65% on the received knowledge subscale, 71.4% on the subjective knowledge subscale, 61.7% on the procedural knowledge subscale, and 100% on the constructed knowledge subscale. The SI, on the other hand, has scored at 50% on silence subscale, 60.7% on the subjective knowledge subscale, 58.3% on the procedural knowledge subscale, and 85.7 % on the constructed knowledge subscale. See Table 30. This pair forms a very interesting mixture and their interviews show that. For example, they desire a collaborative, collegial relationship, but don't seem to achieve it and they want direction, but resent it when they get it.

For example, the CT answered the question regarding the lesson that was not going well in the following way:

Well, the first thing that we would do, is, I would hand back papers and I would have them pull out the textbook and I would have them redo the assignment with the basic principles outlined, and so, I would just talk about applying it. Uh, I've had similar situations where the kids just haven't, they've done something, because they studied for the test. And so, uh, I would before I even got into redoing this, I would talk about trying, and try to get them to change their thinking. Rather than studying for a test, studying to learn. All right, and trying to become involved in what they are learning and applying it, you know, and talking about the importance of that kind of thing. So I would think that the, trying to change the whole concept of why we're doing this and motivate them to get some, involvement on their part, some ownership on their part. And to get, give them a reason for doing this,

that matters. Make it more, uh, important to them, is what I would try to do, and then I'd have them redo that assignment.

CT-7's first reaction in this case was to have them redo the assignment. After some reflection, she decided that it would be best to try to engage or involve the students in the learning. The CT's first reaction to the question was more indicative of a received knower who relies on external authority to tell them what to do, in this case, just tell the students to do it again and the students *will* get it. Upon further reflection, when she decided to try to engage the students, then her response was closer to that of a constructed knower or a Stage B or C teacher, who can and will adapt to meet the needs of her students.

SI-7's responses are indicative of a Stage B or C teacher and a constructed knower. For example, in response to question two, which deals with discipline and the new teacher finding her role in the classroom, she answered:

Yikes, that's really, hm. You could look at it and say, oh, the teacher's, oh, no, you have emotions and students with either empathize with that or you could say no, that's not the case at all, they'll drive you into the ground. It sounds like it's a pretty hard core class. I guess you can just continue on Monday and pretend like nothing happened and just have lots of stuff for them to do so that maybe you'll have less problems with them saying you're a bad teacher...or you could sit down and have this whole big debriefing. This all happened because of this, you were pushing my limits. I guess I probably wouldn't do that. I wouldn't, because I guess I, I look at my own class that I have, my own fifth period history class which is kind of like this and [my] opening up to them sort of worked later on in the semester when we sort of did personal histories and I did one and they learned more about me. But at the very beginning of the semester I don't think that would have worked very well because I think something like this would have made the students say, would have smelled blood...

This SI is reflecting-in-action as she answers this question. In the interview, she was mentally processing the experiences that lead to her answer. She would start an

answer, then hesitate and change course. She did that often in the interview, as if she were listening to herself as she was talking, assessing what she was saying, and then making a change in her response.

In their response to the vignettes in the interviews, SI-7 and CT-7 responded very similarly, although they may be surprised to know that. For example, on the matter of whether or not they had wanted to quit the internship, they both said yes. CT-7 gave her answer as follows:

Well, I went first to my friend next door and ventilated...he said well, it seems to me that you need to talk to [principal]. And so I thought about it for a couple of days and as I was thinking about that I thought, I don't have to do this. I can just quit. Who says I have to do this, you know? I, I have a choice. I can quit. So then when I started thinking about quitting, I said to myself, you are really in trouble. If you are thinking of quitting this, then it's gotten real serious and you need to do something about it. So I went and talked to him [principal] and he said let's meet with [intern coordinator in the school]. And [intern coordinator in the school] said well, let's have a big meeting with all of the teachers who have interns and I can remember feeling like this big (makes gesture that shows something very small) because it was apparent to me that nobody else was having the same problems that I was. So that just confirmed my feeling that I had failed, it was not working. It had to be because I had screwed up, and if I weren't so incompetent to begin with this would never have happened or gotten to this point...and it happened that [university supervisor] came...I forget how she put it. It was just a little twisted then, I felt uncomfortable at the way she said it, but anyway we got together. And in the process they pretty much said you need to outline for this girl what your expectations are. You need to write it down. You need to and, so in the meantime [university supervisor] has gone and talked to [SI]. And so [SI] I guess, I assume, complained about me and then we had to have the talk, which made me want to throw up because I'm not comfortable with confrontation when I'm angry with someone I'm not close to...and she [SI] felt betrayed that I had gone and talked to all of these people and, in retrospect, I don't think that it could have happened any other way nor necessarily should it have. I was having a problem. And I didn't now what to do. So I asked for some help legitimately. And it wasn't, also in retrospect, I don't think that there was really enough support. Um, everybody assumed that it would go fairly well, including, especially myself. And when it didn't it was such a brand new situation to me. And it was so difficult that, you know, I got the support I needed. And I'll tell you it's just

been, been wonderful, a wonderful improvement, wonderful improvement since then.

Part of CT-7's frustration is that the administration of her school decided to give her SI a class to teach at the same time of day that the CT already had a class. The result was that CT-7 could not observe the SI, nor could she help her with what were apparently ongoing problems in a difficult class for the SI. So, while the CT had a high received knowledge subscale score at 65%, indicating that she relied on authorities, when the authorities placed her SI, she accepted the authority's decision, did not challenge it, and became angry and frustrated. When she had difficulty with her SI, she immediately consulted the "authorities" rather than talking directly with her SI.

SI-7, in talking about the same timeframe said:

...I mean we've had some rough spots...what we sort of do now is, for a while, she was treating me very much as another student and not as a colleague...and I was rising to the occasion. I mean just about stuff that she wanted me to keep a journal because that was what [the program] required that all interns keep a journal and that is not really the case...it isn't the case and that you know cooperating teachers keep this journal and she wanted me to do this and I said well, where's your journal. Oh, she has not done anything in it. And I'm not really a journal person, I'm not. I don't like doing them...so now, we usually try to sit down and, and talk about stuff like that...I'm sure it will get tense again for a while and we'll probably have to sit down and we'll talk and you know, it will work itself out.

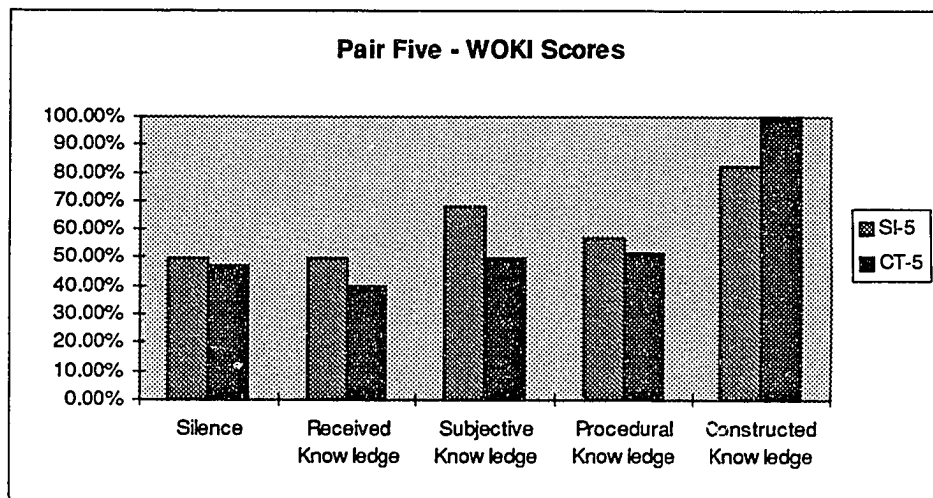
SI-7 is seeking a more collegial atmosphere than she feels she is getting with her CT. She mentioned this in the interview when she talked about being treated more as a student than a colleague by her CT. This pair is talking and working hard at making their relationship work for them. Over the course of the two interviews, it seemed that they were more open with each other in January, 1996 than they were in November, 1995.

It seems that both members of pair seven see collaboration as an ideal, but they are struggling to achieve that ideal. For example, they have not, at times listened to each other, but after reflection, have tried to change. The SI was willing to share her account of a critical incident with the CT, but the CT was not. It seems that the SI was willing to take the risk, but the CT was reluctant. Pair seven had a disagreement over how the CT handled the situation when they had a disagreement in the first semester, and now they have started to talk to each other rather than to others. CT-7 said that she likes having a SI best when they are teaching class together and sharing the responsibility together. The SI-7 has a score at 50% on the silence subscale, indicating that she sometimes feels that she does not have a voice. This feeling was reinforced when her CT did not come directly to her when she saw a problem. In SI-7's mind, her ideas were not solicited — she was placed in a position of silence.

Table 31: Pair Five PCM and WOKI Scores

Pair Five	Role	PCM	WOKI				
		CL	Silence	Received Knowledge	Subjective Knowledge	Procedural Knowledge	Constructed Knowledge
Maximum		3.0	32	40	28	60	28
Possible Score							
	SI	2.3	16	20	19	34	23
	CT	2.7	15	16	14	31	28

Table 32: Pair Five Bar Graph WOKI Scores



The SI and CT in Pair Five both have CL scores in the range of 2.0-3.0 (see Table 31) and seem capable of teaching behaviors that coincide with those in Stage B and C. Their highest WOKI scores are on the constructed knowledge subscale with SI-5 scoring at 82% and CT-5 at 100%. Their next highest scores are on the received knowledge subscale with the SI at 71% and the CT at 57%. The SI scored at 50% on the silence subscale, and both SI and CT are over 51% on the procedural knowledge subscale. See Table 32. Both SI-5 and CT-5 confirm their PCM and WOKI scores in their responses to the questions.

For example, CT-5, in response to the question of what she would do if a lesson were not going well, said:

What would I do...individualizing a little bit more, asking the kids to actually start writing, looking for skills or missing skills in the work that they turn in and making teaching decisions based on what they've actually done..maybe looking at what they already know first, doing some kind of a pre-assessment and then making assessments on what you see, where you need to go from there. Instead of just assuming that they need just the basic skills but actually doing the writing and pulling the skill that they need from the writing...then you go back and reteach but you try a different kind of a method and I think also you need to look at the differences in styles and try and approach in many different ways...

CT-5 articulates many ideas in this passage about how she could adjust the lesson to suit the needs of her students. She is flexible and she reflects on what she has done and formulates new ideas, she “appears comfortable in applying all appropriate teaching models,” and “is most articulate in analyzing one’s own teaching in both content and feeling.” These are characteristics of a Stage C score on the PCM as well as of a constructed knower.

SI-5 in this pair often included the CT in her responses to the vignettes. It was evident from the SI's interviews that she had learned a great deal from her CT up to this point. The SI stated that "I have been modeling myself after her [CT]." When questioned about disagreements, SI-5 felt that it would never happen:

I don't think this would ever happen with [CT] and me. The two of us, whether we agree or disagree, we stand by if it's already been done. Like I'll go to her with a problem and we'll talk it out and I'll use her suggestions but if I go and do something, yeah, she might say well, next time but she won't make me go back. And she stands behind me that way...

CT-5's responses agreed with the SI's perceptions. She said:

It could happen but I think that I would try and stand behind [SI] as much as I could. If I'm going to give her that opportunity to make decisions and there are little things as you're working with someone else closely that are said or done that I don't always agree with but I can't go behind her and put a Band-Aid on everything I don't personally agree with. I invited her in my room and gave her that ability to make decisions. And she's got to be able to do that. And if she makes a mistake, you learn from your mistakes...see, I just, I think I'd just back her up. I really do.

Both SI-5 and CT-5 during interviews described the same occurrence in class that they disagreed about. They had a student who was classified as having Attention Deficit Disorder (ADD) and they had different views on how to manage the student. SI-5 said she thought CT-5 was too lenient, and the CT thought the SI too strict. This disagreement occurred in late October however, as previously mentioned, they never resolved it. This ultimately led to their separation in December. Their PCM responses are revealing because they reflect a willingness to talk and to hear, but not to change. On the PCM, SI-5 wrote "when someone does not agree with me...":

I have always felt that everyone deserves the right to have their own opinion. When someone disagrees with me I like to hear their point of view and respect me with the time to express mine. [Stem score = 2.0/CL = 2.3]

CT-5 wrote:

I try to find out what other people's opinion is and why. I analyze my position more completely and try to explain my feelings better. I also want to be able to justify my position and answer questions intelligently.
[Stem score = 2.0/CL = 2.7]

During the interviews or on the PCM neither SI-5 or CT-5 talked about compromise. They each wanted to be heard and have the opportunity to express their view, justify their position, but they did not mention listening to the other, hearing the other, or taking the perspective of the other. This information might have been useful to the university supervisor as this pair has now separated. The PCM answers on this stem are both lower than their total CL score.

What had appeared to be a healthy relationship in early November was no longer healthy in December, and at the end of the first semester this pair separated with the SI moving to a different school with a different CT. In the subsequent interview, SI-5 related the precipitating incident. She had been teaching, CT-5 spoke with her about the noise level in the classroom, and a disagreement ensued. At the end of the day, the SI and CT talked about this disagreement and agreed to come back the next day to discuss it. Over night however, both the CT and SI spoke with the university supervisor and when CT-5 and SI-5 met the next morning at school, it was clear to both of them that the disagreement had not been resolved, nor could it be at that time. There are some interesting points here. As illustrated by the "disagree" answers they wrote on the PCM, neither CT-5 or SI-5 seemed prone to compromise. Additionally, the CT and university supervisor had talked about changing the SI's placement prior to the disagreement, but had never communicated that to the SI. It seemed in this case that the SI had talked with

the university supervisor, the CT talked with the university supervisor, but SI-5 and CT-5 had not talked with each other, and the university supervisor did not suggest that they do so.

In response to the question on the PCM “when I am criticized...”, SI-5 wrote:

My first reaction would be to become defensive but with a deep breath I would hope to be able to sit back and listen. I understand that no one is perfect and I’m far from it. Criticism, if portrayed correctly can become a very important learning experience. [Stem score = 2.0/CL = 2.3]

This is an interesting answer because she does not discuss how she might evaluate the criticism, who is offering the criticism, or whether or not she would change as a result. Now CT-5’s written response to the same PCM question follows:

My first reaction to being criticized is to “tighten up.” Given time to think about what was said allows me to analyze what was said and the spirit of delivery. I have not always agreed with the criticism, but feel able to act on it if necessary. [Stem score = 2.0/CL = 2.7]

The CT also does not discuss how she would evaluate the criticism, who is offering the criticism. She does mention that she may act on it “if necessary.”

So, how did the relationship fail? It appears in retrospect that both SI-5 and CT-5 were talking with each other, but not about the substantive issues. For example, SI-5 did not know that the CT and university supervisor had talked about changing her placement as early as November, 1995; and while the SI and CT had the disagreement about how to handle the child, they never really came to a resolution about it, they got as far as acknowledging that they managed the situation differently. Furthermore, when the major disagreement occurred in early December, 1995, the SI and CT did not talk with each other, rather the university supervisor placed herself squarely in the middle of the relationship. If the supervisor had been familiar with the profiles of CT-5 and SI-5

that are shown here, it may have been possible for her to develop a strategy that would have been successful in dealing with them. The supervisor may have been more directive with the pair. If the university supervisor had been aware of their answers on the PCM and their scores on the WOKI subscales, she may have been able to tailor her intervention so that the pair would have had at the very least a good discussion prior to separation.

Summary: Non-Collaborative Pairs

The CL and WOKI scores of the non-collaborative pairs were confirmed in the interviews. The high scores on the subjective knowledge subscale are puzzling and it is difficult to understand why this might be manifest. Since subjective knowledge is a private, personal knowledge, based on intuition, it is possible that the interview questions may not have prompted those kinds of responses. The non-collaborative pairs' higher WOKI scores at over 50% on the silence subscale and the procedural knowledge subscale showed the difference between the non-collaborative pairs and the collaborative pairs.

The lack of communication was evident within each pair. In each pair, there was at least one member who wanted to separate and did not tell the other person. Often, when they talked, they appeared to listen to each other, but the resulting behavior indicated otherwise. When these pairs disagreed, they did not resolve the disagreement and the lack of resolution was a factor in the eventual separation of one pair in this group. While learning from each other is one of the most desirable outcomes of the SI-CT relationship, these pairs were not engaged in reciprocal learning relationships. The

SIs seemed to be learning from their CTs in most cases, but the reverse had not occurred.

Chapter Summary

Of the seven SI-CT pairs in the sample, three (pairs four, six, and eight) are involved in relationships that can be characterized as collaborative. In these relationships, both the SI and CT are given and take the opportunity to learn and grow with each other, they listen, they share, they disagree, and they resolve their disagreements. For those in this group, their interview data seem to coincide with the PCM and WOKI measurements, thereby confirming the PCM and WOKI scores in the interviews. Four pairs (pairs one, two, five, and seven) are involved in relationships that are not collaborative. In these relationships, the CTs are not learning from their SIs, but the SIs feel that they are learning from their CTs.

Pair four typified the characteristics of the collaborative pairs in all aspects of their relationship, while pair five typified the characteristics of the non-collaborative pairs. When pair four had a disagreement, they discussed it, came to a decision that they could both support, and moved one. When pair five disagreed over how to handle a child in the classroom, they discussed it, but never came to a decision that they could both support, and they moved on, but they each retained the position that the other person was wrong. CT-4 stated that she expressly chose her SI for what she could learn from her, while CT-5 spoke of “giving her [intern] the ability to make decisions,” as if she were granting permission. Risk-taking was encouraged in pair four, while pair five did not even mention it. Pair four had an open relationship and were quite willing to share what they knew and did not know with each other, as a way to improve their own

skills. On the other hand, pair five did not have a history of open communication with each other so when they had their major disagreement in December, they were unable to find the common ground on which to attempt to resolve it.

The CL scores for both the collaborative and non-collaborative groups were in the same range; each group had one low-scoring CT. The WOKI scores were quite different however. While the collaborative group tended to cluster their scores on the constructed knowledge subscale, the non-collaborative group showed higher scores for each subscale across many of the pairs. The high scores of the non-collaborative group on the silence and subjective knowledge subscales could be helpful as an indicator of lack of collaboration, or ability or skills to collaborate. If a person is either silent or reliant on external authority for direction and knowledge, then it would be difficult to enter into a collaborative relationship, because that person would not have the confidence or skills to contribute to the relationship, or if a person relies highly on her intuition for knowledge, then it is less likely that she will listen to others.

The four pairs who have experienced some problems and have thought of separating seem to lack an authenticity (Pajak and Seyforth, 1983) with each other. In some cases they are working to achieve this authenticity. In these pairs, when one of the members of the pair has addressed an issue with the university supervisor, the supervisor has directed the member back to her counterpart to deal with the issue. This seems to be an important factor in their continued work at their relationship because it has reinforced the necessity to resolve the issue with each other rather than through a third party.

The pair who separated are one of five pairs who have separated this year.
[There are a total of 120 SI-CT pairs.] This pair's relationship, as mentioned earlier,

seemed to be concerned with keeping the appearance of doing well, so they avoided substantive issues. In this pair, when a member spoke with the university supervisor, the university supervisor tried to act as the middle person and the SI and CT did not talk much with each other about resolving the conflict. This may have been a factor in the eventual separation between the pair.

Overall, the pairs were willing to talk with the researcher and to discuss their style of teaching, classroom management, discipline strategies, and the workings of their SI-CT relationship. The results of this analysis show some relationship between intellectual development and collaboration. The next chapter summarizes the conclusions and limitations of this study and makes recommendations for further study.

CHAPTER SIX

CONCLUSIONS, LIMITATIONS, AND RECOMMENDATIONS

The two purposes of this research were to determine if there is a correlation between intellectual development as measured by Hunt's (1971) Paragraph Completion Method (PCM) and Buczynski's (1992) Ways of Knowing Inventory (WOKI) and to examine the relationship between intellectual development and collaboration in a sample of women student interns and cooperating teachers. In this chapter, there is a discussion of the conclusions and limitations of the study, and recommendations for further research.

Conclusions and Limitations

The statistical analyses showed results that were different than expected. It was expected that as the conceptual level (CL) score increases, the WOKI scores on the procedural knowledge and constructed knowledge subscales would increase and silence, received knowledge, and subjective knowledge would show weak positive correlations or inverse correlations. Results of the analyses showed a negative correlation between CL and received knowledge as expected, although it was weak, and a moderate negative correlation between CL and procedural knowledge which was unexpected. In this sample of 74 women, as CL scores increase, procedural knowledge scores decrease. Also unexpected was the finding that constructed knowledge scores on the WOKI bore no relationship to the CL score on the PCM. Finally, it was also expected that a

multiple regression analysis would show that the scores on the procedural knowledge and constructed knowledge subscales would be predictors of the PCM, but this was not proven either.

Essentially, this research did not find strong expected relationships between CL and the WOKI. This suggests that the WOKI is not measuring intellectual development as it has been researched in the PCM for conceptual level. They are not interchangeable measures for women.

Results suggest that the PCM and WOKI are measuring two different things. This poses its difficulties because the PCM and WOKI both claim to measure intellectual development. The PCM has been used for this purpose for 25 years and has been shown to be a reliable measure that has been “administered to several thousand persons during the last few years” (Hunt et al. 1978). The WOKI is a new measure and has been used in only one study with a sample of 349 college women so it has a limited history. The original analyses done on the WOKI (Buczynski, 1993, 1994) showed that five factors existed and they corresponded to the five epistemological perspectives of Belenky et al. (1986). The current research found unexpected intercorrelations on the WOKI suggesting that the five factors are not separate.

If it is true that each instrument is measuring intellectual development, then what can the WOKI add to our understanding of women’s intellectual development?

Assuming that the WOKI has merit as a measure, then it may have a place when used in conjunction with the PCM as an aid to understanding how women additionally think during problem solving dilemmas. The WOKI may add to our understanding of

women's thinking a perspective that is not captured by the PCM. Belenky et al. (1986)

discuss the point that women engage in real talk. It requires

Careful listening; it implies a mutually shared agreement that together you are creating the optimum setting so that half-baked or emergent ideas can grow. "Real talk" reaches deep into the experience of each participant; it also draws on the analytical abilities of each. Conversation, as constructivists describe it, includes discourse and exploration, talking and listening, questions, argument, and sharing. (p. 144)

On the other hand, perhaps the WOKI is problematic as a measure of intellectual development. The results of the intercorrelations on the WOKI subscales in this research were dramatically different from Buczynski's (1993) results. There was a weak negative intercorrelation found between received knowledge and procedural knowledge, a weak correlation between received knowledge and subjective knowledge, and a moderate correlation between subjective knowledge and procedural knowledge subscales. The samples for the research were different; did the difference in sample groups cause the difference in the intercorrelations on the WOKI? Buczynski's sample was predominantly undergraduate (96%) women, while this sample consisted of primarily of graduate students (there was one undergraduate) and practicing teachers with several years of experience.

Belenky et al. (1986) suggested five epistemological positions as emblematic of women's development. Since the WOKI is constructed as a forced-choice, four-point Likert scale, and Belenky et al. elicited information by means of carefully structured interviews, it may be that the WOKI has diverged too far from the original methodology. Belenky et al. listened to and heard women express their ways of knowing in their own words, while the WOKI does not allow for that level of self-expression.

Certainly the richness of the current research is contained in the interviews with the seven SI-CT pairs and has given greater insight to how each individual thinks and feels in relation to classroom dilemmas of grading, discipline, executing successful lessons, as well as the differences and disagreements that naturally arise between student teaching interns and cooperating teachers.

The interviews confirmed the scores of each of the 14 interviewees on the PCM and WOKI. Non-collaborative pairs tended to have scores on the WOKI near or above 50% on most of the five subscales. They had somewhat higher silence and received knowledge scores than their collaborating counterparts. If one is silent or looking to authority, it may be less possible to engage in a collaborative endeavor as it has been defined for this research study. The higher silence and received knowledge scores seem to govern the behaviors of the non-collaborative SI-CT pairs more so than did their very high constructed knowledge scores (3 at 100%). It is suggested that the WOKI silence and received knowledge subscale scores might be useful as predictors or indicators of how a student intern-cooperating teacher pair might work together.

If the supervisor for the SI-CT pair were aware of the scores, it would be possible to suggest strategies that would help the pair to work together so that each person has the opportunity to learn, to grow, to share knowledge and skills, learn to take risks, and learn to resolve disagreements. Specifically, the supervisor, with the proper background, might work with her pairs on consensus, leadership, the importance of authenticity, and techniques for dealing with disagreements. The supervisor can urge the intern and cooperating teacher to continue to discuss a problem until they come to an agreeable consensus with both having a stake in the solutions for the problem. Also the

supervisor can build on the intern's and cooperating teacher's ability to spend enough time together in a full year internship to trust each other in areas where one or the other could take leadership because of greater skill, experience, or knowledge. Even interns can take leadership roles in new math curriculum for example, because of their recent course work. These skills are important. Even in collaborative pairs there is room for expansion and new learning about oneself and in dialoguing about particular dilemmas. It seems inevitable, for example, that an SI-CT pair will have disagreements over the course of a full-year internship. Training and practice in conflict resolution may be very useful to help them deal with each other when the disagreement occurs. Among the non-collaborative pairs, I encountered one pair who were having a difficult time communicating and resolving conflicts between them. They discussed the issues to some degree and agreed to meet on a regular basis to ensure that any conflicts would not persist. The SI missed the first meeting and the CT declined to raise the issue with the SI. In this instance, neither one of the pair has taken the leadership or attempted to discuss the missed meeting with the other.

The collaborative pairs all had high CL scores. Their relationships were characterized by a trusting, listening, open, sharing atmosphere where if they disagreed, they worked until they resolved the disagreement. Their WOKI scores too, seem to indicate their greater chances for success in collaboration as a student intern-cooperating teacher pair because they were most often operating at the epistemological perspective of constructed knowledge, as opposed to the non-collaborative pairs who scored more broadly across the range of the WOKI subscales.

The limitations of the statistical analysis of this study were its sample size and its lack of diversity in CL and WOKI scores. CL scores for the sample were high (mean CL for interns was 2.0, mean CL for cooperating teachers was 2.3) and the highest subscale scores on the WOKI for all were on the constructed knowledge subscale. Another limitation of the study is the possible bias of the interviewer. To reduce the bias, I expressly did not review the CL and WOKI scores of the pairs before I interviewed each individual and before I analyzed the interviews. The bias could have been reduced even further if independent raters had analyzed the interviews.

Recommendations

Recommendations from interview analyses in this research suggest a student-teaching internship program, wherein groups of university supervisors, cooperating teachers, and student interns in groups and in pairs work to learn more about sharing skills and knowledge, taking risks with each other, and resolving disagreements together. Focus would explicitly be on collaborative skills: listening, sharing, trusting, risk-taking, consensus-building, leadership, summarizing, and conflict resolution. In the course of the interviews for this study, there were many opportunities that arose that were ideal for discussion and enhancement of the collaborative skills, for example, when the cooperating teacher or student intern described a disagreement and was unsure how to deal with it. Since each university supervisor works with seminar groups of six student interns, it would make sense to involve them in learning some collaborative skills that they could use in working with the student interns. Where student interns are clustered in schools with other student interns, there is an opportunity to work with the student intern-cooperating teacher pairs in a group on the collaborative skills. It would also

seem that this joint work with all SI-CT pairs in a school would be beneficial to pairs who might be having difficulties. For example, in the current research, a student intern in a site where there were multiple interns related that she gained significant knowledge about teaching by working with other SIs and CTs in her school. She stated that they often met as colleagues and talked about lessons and issues in teaching, so that this gave her another opportunity to learn.

Another asset of training and development in collaborative skills is related to the emphasis on “inclusion” in today’s classroom. Increasingly, classrooms are including students with a variety of learning abilities and challenges, and these students are often accompanied by an adult who is assigned to individual students. In classrooms where there is already a cooperating teacher and a student intern, the opportunity for conflict and need for collaboration increases as the number of adults increases. In one of the SI-CT pairs in this research, there is another adult in the classroom who is assigned to a student. The presence of the third adult has made for additional stress on the cooperating teacher’s time and energy and has had an effect on the SI-CT relationship. For example, according to the CT, the SI has expressed a reluctance to ask for help from the CT or use her time, because the CT is busy with the other adult in the classroom.

Although the current research did not seek to examine the school environments or cultures in which SI-CT pairs worked, it would be an interesting area for future research. Specifically, it would be important to study the degree to which the school environment or culture influences the success of collaboration in SI-CT pairs.

Another possibility for future research may be to conduct a study similar to the current research but with additional components. In addition to the individual

interviews with the pairs, one could observe the classroom when the SI and CT were working together, then interview the pair together and elicit thoughts and feelings on their work in the classroom. The pair could be involved with others in training on skills in collaboration. This process could be repeated over the course of the year. What changes might be observed in the collaboration of the SI-CT pairs as they work with each other in the classroom?

The student interns in the teacher preparation program from which the sample was selected have the opportunity to visit schools and talk with potential cooperating teachers about a placement prior to the internship year. The seven cooperating teachers in the interviews in the current research study said often that they wanted a student intern who was clear about what she wanted and how she might get it. Before they begin the selection process, it is useful to help the student intern think about the questions she should ask of the cooperating teacher during the search period. Student interns can be given a brochure so they are prepared to ask questions of prospective cooperating teachers such as: What are your skills?; What can I learn from you?; Who was your student intern this [or prior] year and may I talk with them about what they learned? The materials that the student interns receive are meant to prepared them to discuss their needs with the prospective cooperating teacher. The student interns in this research (n=38) scored unusually high on the PCM instrument (mean CL = 2.0), which suggests they are capable of articulating a sense of what they want and need. However, research shows that student teaching interns in general tend to have CL scores that place them in Stage A or Stage B, suggesting that they would prefer a more structured learning situation and that they may be less able to ask the types of questions noted. In this case,

supervisors may wish to work with Stage A or B student interns to 1) help them conduct the search within themselves about what they want from their internship, 2) what they can bring to the internship, and 3) how to articulate their own needs and agenda to a prospective cooperating teacher.

It would be interesting to administer the PCM and WOKI to a larger, more diverse sample to see if the intercorrelations found in the current research study between the subscales on the WOKI were still present. It would also be interesting to conduct interviews with a larger, more diverse group of SI-CT pairs. I would recommend interviewing the individuals as done in this study, then adding pair interviews plus classroom observations.

Retesting each individual on the PCM and WOKI would provide a good comparison between the beginning of the full-year internship and the end. Follow up interviews with the seven pairs in this study will also be conducted. The researcher has asked the student interns in the interviews if they would be willing to participate in the study further as they go to their first teaching assignments and it appears that they are willing to do so. This will provide the basis for a longitudinal study of these interns.

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APPENDIX A

Interview Questions

Interview One, November 1995

When you completed the PCM and WOKI in August, you agreed to continue your participation in this research by being interviewed. I would like to meet with you three times during the school year. Each time I meet with you, I will ask similar questions. I would like to audiotape the interview with your permission so I can later transcribe the tapes. This will give both you and me the opportunity to read the transcription and reflect on what you have said here. I am interested in the pattern of your responses over time. I would like to give you some descriptions of situations that may occur in a classroom and have you react to them.

1a. The students in composition presented perhaps the greatest challenge since the course was required for graduation. I opted to postpone the study of grammar and begin with a basic writing mode: the five-paragraph essay. Lacking any other resources, I planned the unit - with misgivings - around the textbook. We read how to select and narrow a topic, how to evolve a thesis statement, how to construct an outline, how to prepare a first draft, how to proofread and revise. the students took a test to confirm their knowledge of these principles. Test scores, although nothing to write home about, indicated that most students had at least been paying attention. Then came the true test - the essay assignment...Almost no one had successfully applied even the most basic concepts we had been studying for five entire weeks!

What would you do the next time you had this class?

2. With my initial assignment it was my number one priority to get my students' trust. As a young teacher, I felt the easiest way for me to do this was to establish peer relationships between my students and myself. At the first meeting of an English class, I asked each student to introduce themselves and add something significant about their personality. The first girl who got up stated her name and made reference to her own sexual activity. I was very embarrassed and found myself only remarking a non-committal "well." What could I say I thought, I did not want to chastise the girl before I had her trust. "If I do," I thought, "perhaps I will never get it." Her friend volunteered to go second and made inappropriate remarks. The two girls continued to interrupt while the other students introduced themselves. I pulled both girls aside, in a buddy fashion, and explained to them that they would have to be more courteous and cooperative in the larger group. While they promised they would, their behavior got increasingly more disruptive.

How would you have handled this situation?

3a. I decided to introduce grammatical terms such as person, number, and tense...when I had just finished reviewing the notes I had carefully put on the chalkboard...one student raised her hand: "What's this bull, Rossbach?" she said with an endearing smile on her face. "Yeah, where are the f----- handouts for this s--t?, contributed another.

How would you handle this?

4a. You decide at the beginning of the year that grades will be comprised of scores on tests and class participation, that is how much a student participates in the discussions. How do you plan to grade participation? And how do you plan to explain your rationale to your CT (or SI) and to an inquiring student or parent?

How would you handle this?

5. You have a student in your class who has taken a knapsack from another student. You find out about it, speak to the student, who promises that it will never happen again. You decide not to call the parents of the student or to report the student to the principal, feeling that you can trust the student and this was a one-time problem. Your cooperating teacher tells you that you should call the parents and report the incident to the principal. How do you resolve the disagreement with the cooperating teacher?

Interview Two , January, 1996

1. When the teacher announced that the class would be reading Romeo and Juliet, the class displayed mixed reactions. Some, mostly girls--true to their set gender roles -- showed enthusiasm and rejoiced at the prospect...Other students mostly groaned...After two days of preparation, we were ready to read on Wednesday. The teacher assigned parts and they began. The teacher picked her strong readers for the long parts. However, all the students had difficulty reading...It was notably tedious and they [the students] began looking at the clock very early in the period. The period ended. What would you do the next time you had this class.

2a. Fifth period life science -- an incredible group, surely brought together by the grim hand of Fate! The class could see the "new teacher" billboards painted all over me, and they were especially quick to capitalize. In the face of my problems with this class, I decided to try "relating" to the students humanistically; this was a suggestion gleaned from several more experienced teachers. I proceeded to explain, or rather purge, my feelings...Alas, as usual, reality corrected my forever idealistic expectations, in the form of Geri's comment: "Well, if you weren't such a bad teacher..."This cutting remark, in the face of my vulnerability, plus a few smirks and other nonsympathetic comments, were enough to push me past my limit. And so, I cried in front of fifth period...

What would you do in this situation at the next class?

3. The lesson I was presenting in health class that day was on air pollution. I had not prepared detailed lesson plan because (as most new teachers), I was overworked from other classes. I figured that I already knew a lot about air pollution...I asked for volunteers to name sources of air pollution, expecting to hear answers about automobiles, factories, cigarettes, buses...Richard raised his hand and wisecracked, “I know teacher! Farts!” I called the class to order and cautioned Richard on his behavior. Five minutes later...Richard blurted out, “Teacher, teacher! Malcolm just told me to [sexually graphic phrase].

How would you handle this?

4. You give a test in your class that has several questions. The questions can be answered many ways and be judged correct. You decide to give points for complexity of thought, organization, and completeness. You give Student X an A and Student M a C. Student X and Student M share their papers with each other. Student M’s parents come to see you and ask for your criteria in grading because they have seen Student X’ paper and believe that their student’s paper is just as good.

How would you handle this?

5. Has there been any time since September that you have wanted to quit the internship? [as SI or CT]

APPENDIX B

PCM

On the following pages you will be asked to give your ideas about several topics.

Try to write at least three sentences on each topic.

There are no right or wrong answers, so give your own ideas and opinions about each topic. Indicate the way you really feel about each topic, not the way others feel or the way you think you should feel.

In general, spend about three minutes for each topic.

(1) What I think about rules...

Try to write at least three sentences on each topic.

(2) When I am criticized...

Try to write at least three sentences on each topic.

(3) When someone does not agree with me...

Try to write at least three sentences on each topic.

(4) When I am not sure...

Try to write at least three sentences on each topic.

(5) When I am told what to do...

Try to write at least three sentences on each topic.

APPENDIX C

Ways of Knowing Inventory

Table 33: Representative Items for Belenky et al. 1986 Dimensions (Buczynski, 1993)

Dimension	Item
Silence	When I am in class and I don't understand what the teacher is talking about, I usually just sit there and don't let on that I am confused. When we have a discussion in class on a certain topic I usually do not participate in the discussion.
Received Knowledge	A good student is someone who can absorb and store knowledge received from others. I find myself looking to others for knowledge. I think that learning is retaining and returning what authorities tell me.
Subjective Knowledge	In the past, I have felt that I have never had my own independent identity but instead I have always been busy being someone's daughter/son, wife/husband, girlfriend/boyfriend, or significant other. Sometimes I feel like I am on a speeding freight train and I have no control over the events in my life In the past, I have never felt like I had my own identity or sense of self.
Procedural Knowledge	I like playing the devil's advocate. (That is, arguing the opposite of what someone is saying.) I find that instead of seeing issues in black and white, I see them in shades of gray.
Constructed Knowledge	When I disagree with someone, I often find myself trying to enter that other person's frame of reference to try and understand why that person thinks a certain way. When I have an idea about something, and it differs from the way another person is thinking about it, I will usually try to look at it from that person's point of view, see how they could think that, why they think they're right. It is important for me to understand why people think a certain way. I pay close attention to the context in which a situation develops before making a value judgment.